ELECTRONIC DATA INTERCHANGE: KEY TO SMALL BUSINESS COMPETITIVENESS

JOINT HEARING

BEFORE THE

SUBCOMMITTEE ON EXPORTS, TAX POLICY, AND SPECIAL PROBLEMS AND THE SUBCOMMITTEE ON ENVIRONMENT AND LABOR

OF THE

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ELECTRONIC DATA INTERCHANGE: KEY TO SMALL BUSINESS COMPETITIVENESS

MONDAY, JUNE 18, 1990

House of Representatives,
Subcommittee on Exports, Tax Policy, and Special Problems, and the Subcommittee on Environment and Labor,
Committee on Small Business,
Washington, DC.

The subcommittees met, pursuant to notice, at 9:30 a.m., in room 2359-A, Rayburn House Office Building, Hon. Norman Sisisky (chairman of the Subcommittee on Exports, Tax Policy, and Special Problems) and Hon. Esteban Edward Torres (chairman of the Subcommittee on Environment and Labor) presiding.

Chairman **Sisisky**. Good morning, ladies and gentlemen. The subcommittees will come to order.

This morning, we are continuing our examination into how the revolution in computer technology impacts the productivity and competitiveness of America's small- and medium-sized businesses. I am particularly pleased that this is a joint hearing with the Small Business Subcommittee on Environment and Labor, chaired by my good friend and colleague from California, Esteban Torres. I know that Chairman Torres has had a long-standing commitment to the issues we will be discussing today, and I am proud that we could do this together.

Today, we will focus on the increasing use of electronic commerce in the economy, and on the impact of the telecommunications revolution on American enterprise. Electronic data interchange—the technology that replaces paper with computerized messages—is beginning to change the way we do business in America. It enables businesses to save time and money, increase productivity, and maintain a competitive edge.

The modernization of small businesses has been of special interest to me. We know that companies achieve competitive advantage at the national and international level through innovation and productivity.

Last October, my subcommittee held hearings on the special problems facing small- and medium-sized manufacturers in adapting advanced computer technology. The United States is falling behind our principal global competitors in manufacturing technology, and many of our small businesses cannot meet the demands of the new computer age.

Today, all American businesses must be able to compete in the international marketplace. Modernization must take place so that we can deliver quality products, at the best price, on time. After decades of inattention to computer technology as a tool of global competition, we are now in a new era of change that is happening so fast and on so many fronts that no one can afford to fall asleep at the wheel of progress.

Smaller firms need to take advantage of existing technology, and we all need to become computer-literate. We are in the era of the electronic transfer of information; get it fast, get it right, and get it going. We can now buy and sell electronically, file our IRS returns electronically, receive our paychecks electronically, design airplanes and automobiles electronically. Our farmers are even getting the going price per pound for their cows on their personal computers, bringing rural America on line with everybody else.

Recently, the Federal Government has begun to implement a policy on the use of electronic data interchange. There are many areas of the Federal Government that are starting to communicate electronically with each other and with their contractors and suppliers. We want to know what the Federal agencies and private industry are doing to facilitate the adoption and use of telecommunications technology by the small- and medium-sized companies they do business with.

The continuing growth of this EDI technology is having a significant and very positive impact on the American economy. We want to make certain small businesses fully participate in what may be the most important tool for business expansion since the telephone.

I firmly believe that the sharing of electronic information can prove to be the great equalizer for many small businesses. We need to do all we can to facilitate this revolution and help American small business take its rightful place in the international marketplace. Decisions being made now by industry, Government, and our educational institutions will have a profound effect on who has the advantage in the marketplace of the future.

Again, I am pleased that this is a joint hearing with Chairman Torres and his subcommittee.

We have an impressive lineup of witnesses with us here this morning, and I am looking forward to hearing from them. At this time, I would like to turn to Chairman Torres for his opening statement.

Chairman TORRES. Thank you, Chairman Sisisky.

It is a pleasure to jointly chair this meeting with the Subcommittee on Exports, Tax Policy, and Special Problems of Small Business.

As you have rightly stated, electronic data interchange is pure and simple a fact of life. American business and Government agencies cannot compete in the world of megabytes and nanoseconds unless, and until, we integrate the electronic office in the routine business transactions.

The computer has been the engine driving EDI for the last 20 years, and, as Government users in the EDI environment, the so-called paperless office, we must ensure that small businesses are full partners in fashioning the structure of this new age.

There is no doubt that Government, which is really the largest business in the United States, will also be the largest single user of EDI. With this in mind, our purpose here today, is to listen to key Government agencies and primarily contractors, and small businesses, about the status of EDI and the timetable, the timetable for the future.

The stakes here today are too high for us to risk and just sit back and let it happen. We can't allow that to happen. So, Chairman Sisisky and distinguished panelists, ladies and gentlemen, we are here today to establish a framework with a full integration and consideration of the small business perspective as we turn the corner in a new age of electronic commerce.

In advance, I want to thank the panelists for being here today. I certainly look forward to your comments on this high technology, this very extremely complex subject matter, and, Mr. Chairman, I yield back the floor to you.

Chairman SISISKY. Thank you, Mr. Chairman.

At this time, without objection, I would like to insert into the record the opening remarks of Honorable Andy Ireland of Florida.

[Mr. Ireland's opening statement may be found in the appendix.]

Chairman SISISKY. Now, I would like to welcome the first panel: Mr. Jerome Dreyer, president of Electronic Data Interchange Association; Ms. Vicki Hodziewich, Director, Office of Trade Initiatives, U.S. Customs Service; and Mr. Richard Donnelly, Acting Deputy Assistant Secretary for Production and Resources, Department of Defense.

I thank all of you in advance for coming. By the way, without objection, the full text of your testimony will be placed in the record. You may summarize. Leading off will be Mr. Dreyer.

TESTIMONY OF JEROME L. DREYER, PRESIDENT AND CEO, TDCC: ELECTRONIC DATA INTERCHANGE ASSOCIATION

Mr. DREYER. Thank you, Mr. Chairman.

This is an exciting time for us in EDI. I am president and chief executive officer of EDIA. As you indicated, the full text of our statement has been filed. I am only summarizing the key points for you.

EDIA is a trade association, founded in 1968, and dedicated to fostering the development and implementation of electronic data interchange. EDIA represents more than 300 organizations from private industry and Government. From almost every industry, our members include manufacturing, distribution, financial services, warehouse transportation, chemical, agriculture, software, apparel, grocery, energy, Government and computer industries, ad infinitum.

It is the largest EDI association in the United States, and more than 65 percent of our member organizations would certainly qualify under the Small Business Administration's definition of small business.

Electronic data interchange is one form of computer interaction among enterprises as well as Government agencies. It is not a FAX or electronic mail, but the exchange of strictly standardized, electronic versions of common business documents.

These documents include, but are not restricted to, such items as purchase orders, invoices, and shipment notices. EDI allows reams of paper to be condensed into a series of key strokes, which are transmitted between trade partners who have reached agreement on the manner in which they will conduct business.

I brought along simplified illustrations on the way this is done, in the form of these charts, and during the question period, I might answer some questions with regard to that.

EDI impacts organizations from all points of the world, across a broad spectrum of industry and Governments. Industries utilizing EDI in their daily operations include banking, grocery, electric, air, ocean, and many others.

Some Government agencies utilizing EDI are represented here today. Many are preparing to enter into the EDI arena. A survey by a research marketing firm specializing in computers, INPUT, reports more than 50 percent of the Fortune 1000 firms are currently using or actively implementing EDI. Another 24 percent are considering EDI.

In addition, INPUT reports that expenditures for EDI, including software, value-added networks, and professional services, were $208 million in 1988, with a projected growth rate of 56 percent annually to reach $1.9 billion in 1993. This forecast includes the coupling of EDI and electronic funds transfer.

In order for EDI to fulfill its promises, it must permeate all levels of enterprise. It must be embraced and used by the small business community as a strategic tool, not as an imposition from on high or ultimatum from larger trading partners, be they commercial, State, or Federal Government.

As you know, downsizing of the defense budget due to recent peace initiatives, the proposals to reduce the Nation's deficit, and the possibility of revenue enhancements, or what I used to call increased taxes, will put even more pressures on the small business owners to: One, compete as efficiently as possible; two, to work harder to find new markets; finally, to enable personnel, especially those in personnel-starved service industries, to work at peak performance levels.

EDI is a management tool that improves the global competitiveness of every U.S. company, large and small alike. It can, by reducing the overhead after a paper transaction—that is, the preparation time, physical transmittal of that paper, and corresponding time and error delays—dramatically increase the efficiency and cost savings in both Government and industry.

EDI creates competitive advantages by allowing: Greater flexibility to create or address new market opportunities, both domestically and internationally; the possibilities for new products and services, improved timely movement of goods; improved fiscal management and cash flow; better management of information and strategic corporate planning, using the theory that fast, accurate data enables rapid and intelligent decisionmaking to attain advantages in the world markets.

Government, both State and Federal, also lead to continued expanded use of EDI in order to become as efficient and economical as possible. Dictating large, upfront investments, either in software, equipment, or communication functions could result in undue burdens on the small business community.

In addition, those who are unable to transition smoothly could be locked out of opportunities so that they will never be able to catch up. It could restrict their access to commercial markets—both domestic and international—Government contract bids, and affect growth and economic health.

We strongly recommend that every incentive possible be given to those small businesses attempting to enter the EDI world; consideration be given to incentives for those large corporations, their business partners creating programs to integrate their smaller business partners in a positive manner.

We urge that these two major subcommittees, as well as the full Committee on Small Business, support and develop Government programs to accommodate small business participation in EDI.

Examine the Government programs currently in place, and support other legislative activities which will address positive changes to U.S. codes which will ease the use of EDI to the small business community.

And finally, promote the use of EDI in the Federal Government to reduce the cost of governing and the cost of doing business with the Federal Government. I stress, with budget deficits staring us in the face, let us be a little more creative and turn perhaps to the technologies of promise, EDI, to help us increase business in the private sector and reduce significant costs in Government.

EDIA recognizes in this time of budget constraint that some of these recommendations will entail further expenditures of funds, but the Association is firmly convinced that the ultimate rewards of competitive advantage and long-term viability for both industry and Government far outweigh the initial investments.

We look forward to working with all of you, as well as the executive and regulatory branches, to assist small business in this endeavor. Once again, I thank you for the opportunity to present our views on a topic which is quickly becoming crucial to the continued success of the small business arena.

Thank you.

[Mr. Dreyer's statement may be found in the appendix.]

Chairman Sisisky. Thank you, sir.

Now, Ms. Hodziewich.

TESTIMONY OF VICKI L. HODZIEWICH, DIRECTOR, OFFICE OF TRADE INITIATIVES, U.S. CUSTOMS SERVICE

Ms. Hodziewich. Good morning, Chairman Torres and Chairman Sisisky. It is a pleasure to come before this joint hearing and talk about U.S. Customs experience with the electronic exchange of data.

I would like to make a brief statement, and my have prepared one entered into the record.

I am but one of a long list of individuals who have come before this Congress to talk about change. One was Vaclav Havel, Czechoslovakia's first noncommunist President in over 40 years. In February of this year, Havel came before this Congress and said some very profound words.

Havel said, "We live in very extraordinary times. The human face of the world is changing so rapidly that none of the political speedometers are adequate."

Like Havel, I am coming here to speak today about change. In this dynamic world we inhabit, the speed of change also characterizes trade and technology. While it is not always possible to anticipate change, be it political, economic, or technological, U.S. Customs is always trying to do so.

What is more, we are constantly implementing new systems and procedures to facilitate the flow of legitimate trade.

Customs faced a rapidly expanding workload in processing goods entering U.S. markets 10 years ago. While imports were expected to double, no such parallel increase was expected in the Customs work force.

Import trade, just like Customs, was awash with the same paper documents—import declarations, visas, permits and releases—and these paper documents were impeding the flow of goods and driving up costs.

So, Customs, in consultation with organizations in the customs brokerage and carrier industries, developed a plan to move away from paper toward fully electronic transaction processing. The first successful effort in this regard was called the automated broker interface, or ABI, which permits firms to file Customs entry declarations electronically, following the rules of Customs proprietary syntax.

The first transmission of entry declaration data from a broker to Customs was in February 1984. Today, only 6 short years later, 82 percent of all formal entry declarations are filed electronically with Customs by nearly 1,000 brokers and importers from over 200 ports of entry.

When it comes to manifest information, the first transmission of ocean manifest data from an ocean carrier to Customs was in July 1986. Today, less than 4 years later, ocean manifest data, representing 75 percent of all ocean tonnage, are filed electronically from some 43 steamship lines.

The first air manifest transmission was received in October of last year from a carrier in test. Our testing program is still underway with four airlines, a software vendor, and a deconsolidator. We are currently receiving over 12,000 air waybills per week at JFK Airport, and, next week, we are expanding to other airports.

It is not just data we are exchanging electronically, but Customs has also moved that way to collect our duties. We have an automated clearinghouse capability initiated only in January of this year. We already have 322 payers utilizing this form of electronic funds transfer, and we are collecting from $8.5 to $20 million per day, using EFT.

Now, the effect of moving to electronic modes of conducting business between Customs and members of the trade has been dramatic. Industry data for Customs review is presented much earlier, the review is accomplished much faster, and cargo is provisionally authorized for release in minutes rather than days and weeks, often while the merchandise is still in transit on its way to the United States.

A joint study of Customs automated commercial system by the Treasury Department and the Office of Management and Budget in 1987, which was updated in 1988, showed that Customs was making productivity gains of over 10 percent per year, and was saving annually $194 million in operating costs. The broker industry was realizing equivalent efficiencies.

In 1985, there were 1,500 active brokerage firms. In 1989, that number had grown to 1,700, an increase of 13 percent. During that time, imports increased 30 percent and broker market penetration increased from 95 percent of all entries to 97 percent.

Most customs brokerage firms are small businesses. A recent study by Ernst & Whinney, which was sponsored by the National Customs Brokers and Forwarders Association of America, showed 80 percent of customs brokers had less than 50 employees, more than half had one office, 88 percent had less than six offices, 77 percent had less than $25 million in gross billings, and 84 percent had less than $2 million in net fees and commissions.

The brokerage industry appears to be very healthy. They report 25 percent earned 16 percent or more profit in 1989, another 25 percent earned between 11 and 15 percent, and another 34 percent earned between 6 and 10 percent.

In the same survey, brokers attributed profitability to three important internal factors: Computerization; quality of labor; and labor costs—in that order.

The Customs and Trade Automation Program has not only grown rapidly, but has done so in an entirely voluntary environment. It did not take the industry long to see how customer service improved and inventory handling costs were reduced by using Customs automation.

Over time, the unit cost of automation has also decreased. The larger firms were the first to join, because they were already automated, to take care of their personnel, payroll, accounts receivable and payable. In many cases, they received their data for customs transactions electronically from their importer clients.

Only about 4.6 percent of customs brokers use mainframe computers. About one-third use minicomputers, while over one-half use personal computers or PC networks. A whole software vendor and service bureau industry has developed to meet the needs of these small businesses. Forty-eight software vendors support 684 ABI clients and 11 service bureaus support 301 more, and 18 support organizations are serving those steamship lines that are not transmitting directly to Customs.

Over half of the brokers spend less than $10,000 annually on automation. Another 32 percent spend between $10,000 and $50,000, and another 10 percent spend between $50,000 and $100,000 annually.

These costs include hardware and software for both customs-specific and normal business uses. The principal EDI link for brokerage firms is with U.S. Customs. However, 27.5 percent report electronic data interchange links with their customers; 13.7 percent with ports, 9.5 percent with carriers, and 4.6 percent with banks.

In the next 10 years, EDI may grow to be the normative mode of exchanging business data—purchase orders, invoices, shipping orders, letters of credit, along with manifest and Customs entry declaration data.

Greatly increased international trade and investment under a liberalized, world-trading system have led to a more integrated world economy. Economic development and stability have come to depend on an uninterrupted flow of international commerce.

"Just-in-time" is becoming standard operating practice for inventory management. Offshore sourcing is common to many domestic industries.

EDI is central to this effort to streamline modern business.

The multitude of proprietary syntaxes limits growth and promotes economical and logistical inefficiencies. Given the importance of information certainty in cargo movement, Customs made the decision to provide the trading community with an alternative medium in which to communicate Customs information.

UN/EDIFACT provides the international business and Government communities with a common parlance for electronic communication. Since EDIFACT is an international standard, it permits communication not only within a multinational firm, but also with other firms and other Government entities.

For example, a carrier preparing manifest data for a vessel which will be calling at ports in several countries could use the same syntax for all.

U.S. Customs chose EDIFACT as its EDI standard because it is international, it transcends both trade boundaries and business sectors, and is the only standard approved by the United Nations.

EDIFACT is being made available to those firms who want to deal with their international counterparts and other Governments in an electronic environment. EDIFACT is not intended to supplant ABI or our automated manifest syntaxes. They will still be available for firms that view their continued use to be prudent business practice.

Last September, our EDIFACT Customs declaration and Customs response messages received status 1 approval by the U.N. That means they have the right to be pilot-tested worldwide. We expect status 2, which is registration as a U.N. standard message, in March 1991.

In recent years, Customs has made significant progress in such areas as automation, electronic processing, and paperless entry. However, this has been accomplished within an antiquated statutory framework—the rationale for which dates back to the days of the sailing ships.

Customs workload increases, both present and projected, as well as technological changes in the dynamically evolving trade environment, require that we increase our efforts to develop innovative systems and procedures. Legislation is needed to provide a solid statutory base for all of these developmental activities.

Customs has developed a compilation of legislative proposals which are critically needed to support and promote its modernization efforts. These proposals are referred to as the Customs Modernization Act. The Treasury Department forwarded this legislative package to the Office of Management and Budget on June 1. OMB and interagency review is currently being expedited.

The package provides legal authority for the electronic transmission by both Customs and the trade of various types of trade and Customs information and notifications.

Our legislative package proposes further statutory support for the policies and practices by which Customs has authorized and accepted the electronic equivalent of a signature for data transmitted through a Customs-authorized electronic data interchange, such as the automated broker interface.

Also, in efforts to work with the trade community to effect more efficient processing, Customs has traditionally invoked a very liberal policy in accepting facsimiles of signatures. This legislation enforces and builds on those practices.

The proposed bill provides for the acceptance of electronic filing and certification or electronic signature for the filing of data traditionally requiring hard copy documentation and authentication.

We are currently working with other U.S. Government agencies to ensure the paperless process will not interfere with effective administration of our statutory import programs.

In today's environment, merchandise and information move much faster than envisioned almost 200 years ago. We believe our legislative proposal provides a statutory framework for the environment today and into the 21st century.

I thank you for allowing me to testify today. Mr. Ehinger, the Director of our Office of Automated Commercial Systems, and I will be happy to answer questions you might have. Thank you.

Chairman SISISKY. Thank you very much.

[Ms. Hodziewich's statement, with attachment, may be found in the appendix.]

Chairman SISISKY. Now we hear from Richard Donnelly, Acting Deputy Assistant Secretary of Production and Resources, Department of Defense.

TESTIMONY OF RICHARD DONNELLY, ACTING DEPUTY ASSISTANT SECRETARY OF PRODUCTION RESOURCES, OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE FOR PRODUCTION AND LOGISTICS, U.S. DEPARTMENT OF DEFENSE

Mr. DONNELLY. Thank you, Mr. Sisisky. I am pleased to have the opportunity to discuss the benefits of the transition to digital data interchange. I have a rather lengthy statement that I will summarize.

This transition is already well underway in industry, and, in the Defense Department, we are taking steps to develop, apply, and implement this change throughout the Defense Department. Our plans include two complementary initiatives.

First is the electronic data interchange, EDI initiative, for the digital interchange of business transactions such as purchase orders, invoices, and so forth.

Second is a computer-aided acquisition and logistics supports, or CALS, for the digital interchange of technical data, such as engineering drawings, technical manuals, and so forth.

We also recognize the integral role small businesses must play in this transition. Of the 15 million or so DOD contract actions per year, approximately 70 percent of these involve small businesses.

Of course, there is the additional subcontractor flowdown from the major prime contractor awards we make.

We are using an evolutionary approach guided by three principles. Let me highlight them briefly for you. The first principle—we are committed to working closely with industry. The continual dialogue with industry is helping DOD recognize and address issues which may impede a successful implementation.

The EDI involves working closely with the X-12 Standards Committee of the American National Standards Institutes, or ANSI. The CALS initiative involves a joint partnership with the CALS industry steering group know as the ISG, which is a coalition of industrial associations and professional societies.

The CALS' ISG is supported by about 700 members. There is a small business task group which I find particularly noteworthy. They have produced a document called "Computer Aided Acquisition and Logistics Support CALS and Small Business," recently, in November 1989.

There is a formal liaison between the CALS industry steering group and the industry EDI associations.

The second of the three principles is our commitment to using national and international standards. We are working with the ANSI X-12 Committee on the implementation of EDI standards and further development of standards to cover additional business areas.

We have a cooperative effort with the National Institute for Standards and Technology, NIST, at the Department of Commerce, for CALS standards development and testing. These standards are being written into DOD contracts for weapon systems and automatic data processing systems.

We believe these standards serve small businesses as well. Their use opens up markets for those who cannot afford a separate system or translator to deal with each of their customers.

The third principle is gradual DOD transition using pilot projects. Through pilot projects, standards are put to a real world test, and business application issues can be identified and addressed.

Some examples under EDI—you know we work with acronyms over at the Defense Department, so I am going to lay a few on you—is the paperless order placement system, or POPS, and that is being handled at the Defense General Supply Center in Richmond, Virginia. This is a system where electronic orders acquire items direct from a contractor's distribution system, and was initially for items with a limited shelf life. This is a perfect system to have in operation as it eliminates the need for large wholesale stocks. Again, we will be learning from the progress of that pilot study.

Another one is called EASE, Electronically Assisted Solicitation Exchange. The pilot site is the Naval Supply Center in Jacksonville. It posts requests for quotations, RFQ's, for small businesses on an electronic bulletin board so small businesses or other businesses can call up the information digitally.

Of course, this expands some competition. The previous practice we had was just to obtain three quotes, and there appears to be a good response. There are about 150 contractors who have participated in the pilot process.

There was a computer terminal installed at Jacksonville, which would be for the use of people coming in who didn't have their own computers, but it wasn't used, which is an indication to us that many of the small businesses do have the PC's and modems that they require.

Let me give you a couple examples in CALS. The major front-burner example, I think, is the Navy's RAMP Program. RAMP stands for Rapid Acquisition of Manufactured Parts, and there is a prototype in a manufacturing facility operated in Charleston, South Carolina.

What makes RAMP different is that digital data in a CALS standards form drives the operation. Digits go in and a part comes out in an average of 30 days, compared to perhaps 300 days previously, which is a substantial leadtime reduction. This has a lot of interest in the Defense Department, because leadtime reduction is very important to the competitiveness of our suppliers in the world marketplace, as well as it has readiness implications for emergency planning.

This particular part here, which is called filter bowl, is much like those used on the Los Angeles-class submarine, the 688, and the RAMP technology allows us to go in a completely paperless environment, using computer-aided manufacturing techniques.

Again, instead of taking 300 days or so, we are talking 30 days or less. It is a very important concept. We think the RAMP-like manufacturing cells will be more widespread in the industrial base as we move into the 1990's.

The importance to DOD is that we can get certain spare parts on demand, just in time, rather than stocking large inventories. Obviously, we are going to be in difficult times being able to keep the stock levels we would like. This represents an alternative for that.

The Navy has just initiated a program specific to the transfer of RAMP-type technology to small businesses. The RAMP small business case study is sponsored by the Naval supply people, the Defense Logistics Agency, and FEMA, the Federal Emergency Management Agency.

Its purpose is to demonstrate RAMP capability suitable for small and medium job shop facilities. The Defense Construction Supply Center announced in the Commerce Business Daily on the 16th of April that they are looking for interested small manufacturers who have numerically machine tools, computer-aided design, with interface to machine tools and have an existing DOD business base. The plan is to initiate case studies in October of this year with a demonstration period of 12 to 18 months.

Of course, the lessons learned in these pilot studies will help us shape our future implementation plans.

We recognize, also, that outreach activities are an essential ingredient to the successful transition to EDI and to CALS. Let me just touch on some mechanisms to improve the awareness of small businesses.

One would be the CALS electronic bulletin board operated at NIST for DOD. Currently, it has approximately 1,800 users involved in the system. Users can identify key points of contact, upcoming meetings, and they can actually download selected documents, for example, on CALS standards or industry reports on CALS and EDI.

Dissemination of CALS and EDI literature. We have a network of 700 small, disadvantaged business offices. We have small business development centers located at universities and colleges throughout the country. We support industry-sponsored workshops to promote the benefits of EDI and CALS to small businesses.

CALS workshops at Textron Lycoming last summer, GM Allison last month. One is planned for later this month at Raytheon in Boston, and several others are planned throughout the year. A small business workshop was held at Marshall University in West Virginia this past April.

The Private Sector Council will be holding conferences on EDI's and CALS in several major cities beginning this summer.

The DOD has participated in CALS expositions sponsored by NSIA each of the last 3 years. Last year, the attendance numbered over 1,800 people, many of whom were small businesses.

We are exploring alternative approaches for participation with State, local, or private sector outreach centers. For example, we are providing information and speakers to support an industry-funded CALS center in Dallas, Texas, which provides educational courses and conducts applied research programs.

We have an issue on data protection. The Defense Department understands that the exchange of business and technical data involves data protection and security issues. We are looking at various means of resolving data protection and security issues for EDI and CALS.

In addition, NIST is conducting a risk assessment study of the CALS and EDI environment. We have established the protection of logistics—last acronym—the Protection of Logistics/Unclassified/Sensitive Systems, PLUS Program, to prototype tools for the protection of EDI and CALS data, and that is with the support of Lawrence Livermore National Laboratories.

In conclusion, I wish to reemphasize the Defense Department is committed to facilitating, not facilitizing, the effective transition of small business into the era of the digital interchange of business and technical data.

The Defense Department is sensitive to the concerns small businesses may have about the transition, but we believe that this transition is inevitable, and, I believe, personally, it is an opportunity for the small businesses, as well.

So, we will continue our concerted efforts with industry, and together we will create an environment in which small businesses can vigorously pursue additional opportunities afforded by EDI and CALS.

That completes the summary of my testimony. I will be pleased to respond.

[Mr. Donnelly's statement may be found in the appendix.]

Chairman SISISKY. I appreciate, Mr. Donnelly, your statements about acronyms. I have served on the Armed Services Committee for almost 8 years. We even had a list of acronyms, and we couldn't always locate them on the list. As a matter of fact, on the fourth floor of the Capitol, in a closed, classified briefing last week, we had a general up there talking in acronyms that nobody understood.

Even with our list, we couldn't find them. I appreciate your clarifying them for us. Not many people from defense care about us poor people who can't remember what they all stand for. I do thank all of you.

Let me start with you. Are all the services operating independently?

Mr. DONNELLY. There are independent efforts. I touched on the Navy's RAMP Program, obviously a Navy program. The Air Force manufacturing has technology efforts on the way that are similar to RAMP. They are independent, but they are also linked, as well.

One of my first initiatives this next year is make sure we can have a better linkage between the three Services.

Chairman SISISKY. We have heard from people who actually do the work in the Government facilities, both Government employees and contractors, and to a degree they are frustrated there is no generic system. Have you heard that as a problem?

Mr. DONNELLY. Not by that particular way you described it, sir, but I will tell you, at the Office of Secretary of Defense [OSD] level, we have a near-term initiative to sponsor major thrust areas we want the Services to arrange their budgets under, and I think you will be seeing some changes in the very near future.

Chairman SISISKY. I will ask you, and also Ms. Hodziewich, are any of you working with the Small Business Administration at all?

Ms. HODZIEWICH. No; speaking from Customs, we are dealing with the industries that deal directly in the international trade environment; brokers, importers, carriers, et cetera.

Chairman SISISKY. Mr. Donnelly, how about the Department of Defense?

Mr. DONNELLY. We have a small and disadvantaged business structure in the OSD, as well as throughout the military departments. I can't speak for that structure, but I believe they have a day-to-day relationship.

Chairman SISISKY. Do they sit on your CALS group?

Mr. DONNELLY. They are fully aware of CALS. This particular pamphlet, although it was an industry pamphlet, fully has a small business bent to it.

Chairman SISISKY. Ms. Hodziewich, you give an astonishing figure. In 5 years, electronic customs entry filing has gone from nothing to 82 percent. That is astonishing. Of course, you have a little leverage on the people you deal with, do you not? I am serious when I say that. Obviously, you have leverage, but to get that figure, it must be of value to the people who are doing it.

Mr. EHINGER. I am Director of Automated Commercial Systems. The reason for that rise, that rather dramatic rise, was not only the fact this was an innovation and automation brought something to the Customs Service, but the fact is, by receiving the data in advance, which is what EDI allowed us to do, we could process the cargo much more rapidly, thereby benefiting the trade community.

Of course, that is an enormous incentive right there.

Chairman SISISKY. Did you mention you had a productivity increase?

Ms. HODZIEWICH. Ten percent per year.

Chairman **Sisisky**. That is fairly good. I don't know of any agency in the Government that could do that. Certainly, if you have a package, that would be one heck of a thing to sell it on.

Mr. Dreyer, I hate for you to bring all those exhibits over and not explain them. I can't see the other one there.

Mr. **Dreyer**. I think most of the people in this room are aware of the methodology of EDI activity. I would be happy to go up there, if you like, but I think everybody knows.

Chairman **Sisisky**. I have heard that very few banks are involved in EDI. Is this correct? Less than 1 percent is what I have here.

Mr. **Dreyer**. I think what you find is the window is open now for EDI in many industries. The banks have had other crucial problems to resolve over the years. I have had meetings on EDI with the American Banking Association, the EFTA, and the NACHA group. They all have committees now. They all want to move forward.

One of the problems most bankers cite to me is they see it as a competitive strategy. Many of them do not engage in it because they feel they have the advantage by not being in EDI. That is a short-term philosophy.

Another aspect of the thing is many of the banks have been struggling over the last couple of years, particularly in the S&L's, as well all know, and so the positive thing that I see is that they have all formed these major committees within their associations. I suspect once they see they can make money, besides the retail side and the commercial side with EDI, they will make advancements there.

There are several banks. In Canada, the Royal Bank of Canada, First Chicago Bank, and First Bank of Boston have been pioneers in the payment side and gotten into EDI, but my conversations with bankers, in general, they look at it two ways.

One, it is a show-me thing, where I can make money, and we are not quite ready to move in that direction for strategic reasons. Another thing, I have got to have a product to sell and make money on.

Chairman **Sisisky**. Thank you.

Chairman Torres.

Chairman **Torres**. Thank you, Mr. Chairman.

Let me continue with Mr. Dreyer while he is on. Mr. Dreyer, you mentioned in your statement here—I thought it was a very important comment—that Government and major industry, as they move into the natural course of EDI, must meet the demands for reduced overhead and greater profit margins, and then you cite this technological wave could and shouldn't create a dangerous undercurrent.

So that those organizations are moving into EDI, plus take care of their smaller business partners. How do you, or how can the larger businesses, that is, who we call larger trading partners, how can they help the small business integrate into EDI?

Mr. **Dreyer**. First, I would like to state that all large businesses do not look at their small business partners in a negative way, forcing them economically to engage in EDI. Many of the large corporations have programs.

One that comes to mind is DuPont has a very fine program to help that integration, and there are many others.

The main problem is, again, of seeing ways that the benefits will occur to the larger partner by bringing these small partners into it.

It is an education process, not only for small companies to learn the technical aspects of EDI and learn what software and communications to engage, but also to make sure that the larger partner sees the value of bringing these important entrepreneurs and smaller businesses along with them, because they do serve an important role.

There are 19 million small businesses in the United States.

Chairman TORRES. I see.

Let me move quickly to some of the other panelists. Ms. Hodziewich, you were citing chronology in your statement, and you mentioned the advent of all these new very modern Customs methods in dealing with the whole Customs Service. I started out in customs in an international trading company in 1981. That was the kind of business I went to, after I left my other life in Government, and I ran into that world of confusion, letters of credit, the manifests, the permits, the licenses, bills of lading certificates.

I was inundated by all that paperwork. I really had a hard time. As a matter of fact, it was a hard time, because it was 1981, and the trade picture was just going like this, so I got out of the international trade export business.

Thank goodness for politics, I ran for office, and I am here. But let me see if I understand your testimony regarding the use of EDIFACT.

Ms. HODZIEWICH. Yes.

Chairman TORRES. EDIFACT?

Ms. HODZIEWICH. That is also an acronym which stands for Electronic Data Interchange for Administration, Commerce, and Transport. It takes the normal documents you would find in administration, commerce, and transportation, and builds messages with which to do EDI.

Chairman TORRES. Which I did not have in 1981.

Ms. HODZIEWICH. In fact, it did not come into existence as a concept until 1985.

Chairman TORRES. Next weekend, a number of us in Congress, about 20 of my colleagues on both sides of the aisle, will travel to upstate New York to meet, as we do twice a year, with members of the European Parliament, our counterparts, and we sit down and talk about trade issues. We talk about reciprocity. We talk about what is happening in the year 1992.

Do you expect the European Community will adopt EDIFACT as their standard?

Ms. HODZIEWICH. Absolutely. In fact, EDIFACT is developed under the United Nations Economic Commission for Europe, Working Party 4 on Facilitation of International Trade Procedures. Further, it is endorsed by the Customs Cooperation Counsel [CCC], which is an international organization headquartered in Brussels, comprising 104 customs services.

It was publicly supported by the CCC in February 1989, and that support was again reiterated in the summer of 1989, by the CCC representing customs services of the world. All of which are international by the very nature of the work they do, shepherding goods and peoples across their borders. All supported EDIFACT.

In fact, six other customs services are already using EDIFACT, in addition to the United States—Australia, Canada, New Zealand, Singapore, Sweden, and Norway. It has been publicly supported by the Customs Administration of Austria, France, Ireland, Poland, Portugal, Switzerland, and the United Kingdom.

Chairman TORRES. So, 104 countries have now endorsed the standard. What is the current status of the Customs Modernization Act?

Ms. HODZIEWICH. We submitted it to Treasury. It was approved and forwarded to the Office of Management and Budget on June 1. OMB is attempting to get an expedited interagency clearance.

Chairman TORRES. Very good.

You are quick on these answers. Let me ask you if you can tell me in your estimation what percentage of the customs brokers in the United States are small businesses?

Mr. EHINGER. I don't know of one customs house broker that would not fall within the definition of being a small business. In the last 5 years, we have noticed a small trend in that some brokers have become subsidiaries of larger companies.

There are a couple who have been bought out and are operating entities within Fortune 500 companies. With those exceptions, the rest of the trade are literally all small businesses. All 1,700 are considered small businesses.

Chairman TORRES. We could use 1,700 as an approximate.

Mr. EHINGER. The number changes slightly as individuals incorporate, or become partnerships, or buyouts and consolidations take place. The overall number grows slowly. It has been about 1,700 for the last year.

Chairman TORRES. Thank you.

Mr. Chairman, if I might wrap up with a question to Mr. Donnelly. Mr. Donnelly, I visited the Commander—with Commander Jenkins in Jacksonville, Florida, and he has the program you call EASE, the bulletin board type of program, and it struck me how relatively simple the program works, because he uses their bulletin board system.

The other thing that struck me is how you can save real money for the Navy, in this case through the good old-fashioned best way of doing business through this bulletin board.

My question is, why isn't this used throughout the system? Not just the Navy, but throughout the services in this country?

Mr. DONNELLY. My prepared testimony, and I summarized it briefly, mentions that EASE is a pilot test. I think you are absolutely on target. Here is an example of something that is working very well, and we need to take EASE and some of these pilot tests, and see how they relate together, and use it as a follow-on implementation throughout the Department.

I find we are in agreement.

Chairman TORRES. Good, glad to hear that. Chairman Sisisky spoke to this issue of the tremendous list of alphabet soup that we go through when we deal with DOD. CALS, you talked about today. RAMP, EASE, PLUS, me, you. One that I didn't hear you mention was SPEDE, S-P-E-D-E, right, where the participating vendors have been given the software to use on the PC's.

Do you see this practice as applicable in other areas, that is to say, could small businesses in the entire procurement system, the procurement base system, use this particular device?

Mr. DONNELLY. I am not familiar with SPEDE, as an acronym. I lost track of your question there a little bit. I will have to get back to you.

Chairman TORRES. It was in your testimony, and you didn't mention it, and that is why I thought I would get back to it. It is called S-P-E-D-E.

Mr. DONNELLY. Let me find the answer to that, and before the hearing is over, I will get back to you.

Chairman TORRES. Let me underscore what you said in your activities. You said DOD will make small businesses aware of the concepts, the potential benefits, and how EDI and CALS may provide new business opportunities for them, so I appreciate that.

We have to say that over and over, so that the rest of the system understands—

Mr. DONNELLY. We have a role to play, there is no question about that. DOD can help provide a leadership role and bring about some very rapid changes. We are a substantial buyer of equipment and will continue to do so in the future.

Chairman TORRES. We didn't find SPEDE?

Mr. DONNELLY. We will. I wouldn't try to escape.

[The information may be found in the appendix.]

Chairman SISISKY. Mr. Bilbray.

Mr. BILBRAY. Thank you, Mr. Chairman. I won't give it, but I would like to submit for the record my opening statement.

[Mr. Bilbray's statement may be found in the appendix.]

Mr. BILBRAY. I was not here for the beginning testimony. I apologize, but what you are telling us, I am getting the same complaints from our small businessmen throughout the State of Nevada. Basically, they are inundated with paperwork, and duplicate reports, and so forth that just drives them crazy, especially people who have very small businesses and have to hire an accountant to just about do all this, or specialized employees to meet the requirements that the Government requires.

I am hoping what you are telling us is, if these systems are implemented in the Government, we can cut down on the amount of employees we want, because what I have seen in my brief 3 years in Congress, 3½ years, is we implement these new systems, but we still seem to be growing in an alarming rate, an amount of employees who are hired by different departments.

Are you telling me, basically, if we implement this system, which is what I have seen, an outstanding system, we have to know that we are actually going to be able to cut back on the amount of people who have to be hired by the Government, so we can get this bloated bureaucracy down to some reasonable level, or am I naive?

Mr. DREYER. There is a positive to that, also, which is increased productivity. Not necessarily a declination of the people working on the job, but retraining into other areas that are equally productive and more productive. It does have an ancillary benefit, both in Government and private sector, of potentially reducing costs long-term.

If that is your initial goal, that is an incorrect one, I think, for industry and Government. What you want to do is increase productivity, better quality, rapid and accurate information for decisionmaking, and managing your information employees in a proper fashion, and then we worry long-term of reducing costs.

Mr. **Bilbray**. Anybody else have a comment? That is not the answer I wanted to hear, but I am hoping that somewhere along the line, because we heard figures, by the turn of the century, one out of every four people in the United States will be employed by the Government.

The way things are growing, and I am just hoping some of these new systems, as we develop this modern technology, will be able to reduce the amount of people needed to carry out the jobs of Government.

Just like in the Department of Defense, the manpower. Of course, I don't think we will have a computer or program that is going to replace the foot soldier, but half the cost of DOD budget is manpower, and I am sure in every other Department, manpower makes up 70 to 80 percent of the cost.

Any other comments? What Mr. Dreyer said, do you all feel?

Mr. **Donnelly**. If I heard him correctly, I don't think we should start from a premise of using electronic media to reduce people. I think that should be a disciplined and natural fallout, however, starting off with electronic data interchange.

In other words, you don't start by saying let's get rid of 20 percent of our people. You start by saying, let's improve our productivity by *x* percent and have the discipline necessary to make sure that, as priorities change, the people do not become attached to that any more.

Mr. **Dreyer**. We did a study in the private sector, and everybody would think the first reason they would say they got into EDI was saving money. Incorrect. The number one reason people got into it, they felt they had a strategic advantage in the marketplace.

Saving money was about number five. Only time will tell what can transpire in that direction. I think saving money long-term is on the agenda, but don't look at it as an immediate return.

Mr. **Bilbray**. This to me is much the concept of retooling. The initial cost of going into these systems is high, but in the long run, by increased productivity and efficiency, you will actually save money and actually compete worldwide.

Mr. **Ehinger**. I have been around in this business about 10 years, dealing with this, and I can remember when we first started, those same questions were asked. Are we going to save money? Indeed, the Customs Service did not save money in its earliest days.

What we have recognized over the years of developing automation is we have achieved cost avoidance. As we have experienced an enormous rise of the imports in the United States, we have been able to handle them more efficiently and more rapidly and have more control over the process than we ever could have with the same amount of people had we not had this automation. This is especially true due to receiving the data from the trade via EDI in the way that we do today.

It has certainly not reduced the number of Customs employees, however, overall. We have just about what we had to begin with, but we are doing a better job.

Mr. **Bilbray**. So, you are not increasing?

Mr. **Ehinger**. Cost avoidance is the term you hear most often.

Mr. **Bilbray**. Thank you.

Mr. Chairman, I yield back.

Chairman **Sisisky**. Mr. Torres.

Chairman **Torres**. Mr. Chairman, I wanted to publicly thank you for convening these meetings on this very important subject. I know this is an excellent time to be discussing this issue as we begin to face all the new challenges that we heard about this morning, and taking place in the world, and I want to thank Mr. Dreyer publicly as well, for the work he is doing, and EDIA the association.

It is really acting as a catalyst in bringing to it the important ingredients to meet those challenges. I thank you again.

Chairman **Sisisky**. Thank you.

I do want to ask a couple more questions. Mr. Donnelly, I didn't idly ask that question about the generic gateway. You know what problems we have with the services operating their own accounting systems, and I would hate to think each service is working independently on this and developing systems that are not compatible.

I think it is important, particularly with small business, that we kind of get the same thing happening, that they can get in fairly easy, and this would pertain to industry, too.

It would seem to simplify things and give that opportunity to the small business person that he would need, and I would hope you would carry that message back, because if this thing gets out of hand, and all the services act on their own and are completely different, it is like the accounting system now that we can't change. It is ingrained, and we can't do anything about it.

So, I hope you would take that back with you today!

Mr. **Donnelly**. That is well-said, sir, and I agree with you. There is a need for more standardization among the services.

Chairman **Sisisky**. Thank you. Because, as you know, the services have a tendency to drift on their own.

Ms. Hodziewich.

Ms. **Hodziewich**. Yes.

Chairman **Sisisky**. Some 2 years ago, we had the Department of Commerce testify here in front of this subcommittee. It had to do with exports, and we were trying to find out information, which is the basis of any good judgment and planning, and they readily admitted that they did not have the information, because of the massiveness of bills of lading and manifests and everything. What is your involvement with exports?

Ms. **Hodziewich**. Customs is involved in exports. We do random spot checks of exports, and we collect shippers' export declarations for the control of critical technology, the export of critical technology.

Chairman **Sisisky**. This same system could receive information. In other words, we don't know how much is being exported of what commodity to what country. I think it is extremely important that we know.

They have been trying to build that system.

Ms. HODZIEWICH. We have started, I think. Most all customs services pay far more attention to imports than export because there is a revenue implication. We collect duties on imports. Certainly, within Customs, we have talked about building a system to handle exports similar to the way we handle imports.

We met on the EDIFACT Customs declaration I spoke about, with Census and we said, "Does our message handle your shippers' export declaration, does it have all the data?" They said, "The Customs declaration we built in EDIFACT could be used on the export end as well."

It is a question of resources—of having to build the system, but it certainly is possible.

Chairman SISISKY. Very good. Thank you very much, and I thank all of you. The testimony has been very interesting. We have had this panel on for over an hour. I appreciate your indulgence. Thank you so much, and particularly you, Mr. Dreyer, I was really surprised when you said this is the first time any congressional committee has really done anything on EDI. We haven't done anything yet, but we will not forget it.

Thank you so very much.

Chairman SISISKY. Our next panel includes Mr. Larry Kittelberger, director of computer services, Newport News Shipbuilding; Mr. Frank Brake, manager, computer systems development, Newport News Shipbuilding; and Ms. Judith Payne, associate social scientist, the RAND Corp.

You may proceed, and all of your prepared testimony, without objection, will be included in the record.

TESTIMONY OF LARRY E. KITTELBERGER, DIRECTOR, CORPORATE COMPUTER SERVICES, NEWPORT NEWS SHIPBUILDING, ACCOMPANIED BY FRANK BRAKE, MANAGER, COMPUTER SYSTEMS DEVELOPMENT

Mr. KITTELBERGER. Mr. Sisisky, Mr. Torres, and members of the subcommittees, my name is Larry Kittelberger. I am the director of corporate computer services at Newport News Shipbuilding. With me is Frank Brake, the manager of computer systems development at Newport News Shipbuilding. We welcome the opportunity to testify before this joint hearing on electronic data interchange.

The fundamental question about electronic data interchange is not if it will happen, but when and how. Virtually every aspect of daily life is already affected in some way by the exchange of electronic information.

In fact, the proliferation of devices like FAX machines, and the growing amount of digital telecommunications, make telephones capable of being the send-receive devices that enable and, actually, create electronic data interchange.

EDI is already happening, and the rate of change is increasing rapidly. The ability to accept this change, manage its influence, and harness and exploit emerging capabilities will make the difference between those companies who are beneficiaries, and those who are victims.

There are almost as many definitions of electronic data interchange, or EDI, as there are points of view. EDI is really a technical discipline defined by specific parameters, protocols, and methodologies. A simplified textbook definition might describe EDI as intercompany computer-to-computer transfer of information and documentation.

However, transfer of data can take place in various forms and does not necessarily involve direct communication links between the participants. In this, this diskette contains all the information we provided to this subcommittee, and still has room for eight times that much.

The methods used to exchange electronic data range from the transfer of magnetic media, computer tape, and diskette, to the transfer of information from computer to computer. Electronic data interchange can apply to applications that range from fairly simple word processing text, to complex product design data which directly drives or controls manufacturing machines.

At Newport News Shipbuilding, a strategic business decision has been made to fully participate in the much-discussed information revolution that heavily involves the exchange of electronic data. Our experience shows that the electronic exchange of business information is not only a necessary investment, but provides mutual advantages to those companies that implement it wisely.

Like many companies, today we transfer data electronically in practically all forms of media including, magnetic tape, diskette, direct communication link, and communication links employing satellite transmission. Data is exchanged via mutually developed formats and Government and industry standard formats such as the initial graphics exchange specification, commonly referred to as IGES.

In the early 1980's, we initiated the electronic data transfer of payroll and direct deposit information to the Federal Reserve Bank. Since that time, our expanded electronic data transfer has grown to include ship design and logistics support data, purchase order processing, employee benefits, employee hospital care precertification, and expanded direct deposit payroll.

For example, we have exchanged computer-aided design data, as part of the Seawolf Project, with J.J. Henry Co., Inc., a small business. We exchange electronic data with Williams & Watts, Inc., also a small business in Fairfield, New Jersey, as part of our purchase order processing.

Since our earliest recognition of the importance and impact of EDI on the competitive market, we have maintained strong involvement in various industry groups and organizations that are developing standards for the electronic exchange of data.

We continue to actively participate in several of these organizations. A few examples are: PDES, Inc., the IGES/PDES Organization, and the Navy/Industry Digital Data Exchange Standards Committee, NIDDDESC.

Our experience with information technology and data exchange is best related in terms of the company's involvement with the Department of Defense's Computer-Aided Acquisition and Logistics Support Initiative, CALS. This experience demonstrates the importance of the CALS initiative with electronic data exchange of data as a key ingredient that runs throughout the process.

As you are aware, CALS is a Department of Defense program initiated in 1985. At about this same time, some industries began to formulate the same kind of approach for various business reasons. A primary CALS goal involves the transition from paper-intensive acquisitions and logistics processes to highly-automated and integrated life cycle support for the weapons systems of the 1990's; for example, a compelling reason in meeting the Navy's objective of the paperless ship is the potential reduction of approximately 16 tons of technical documents that carried on the Los Angeles Class submarine, SSN-688.

CALS concepts provide a common understanding between Government agencies and contractor organizations in the use and transfer of technical information in electronic form. Since the purpose of CALS is to enhance the manufacturability, maintainability, reliability, and ultimately improve the availability of weapon systems through the use of computer technology, electronic data interchange is embedded in the CALS concept.

The Seawolf submarine, SSN-21, is a primary CALS feasibility demonstration project. The detail design phase of this weapons system involves two private shipyards. As the prime contractor, we were awarded the lead design yard contract and are responsible for the overall design of the submarine, and the detailed design of the entire forward section.

In addition, we are responsible for the integration of design data developed by the propulsion plant designer. The Electric Boat Division of General Dynamics was awarded the propulsion plant design yard contract and is responsible for the design of the propulsion plant and the aft section of the vessel.

This unique relationship means that our competitor is also our subcontractor, and since this ship is designed to be built by either shipyard, we will, in turn, support Electric Boat Division in their construction of the first ship. Electronic data interchange is paramount in this process.

EDI is an achievable goal and will prove to be very beneficial to those businesses who aggressively embrace the technology. However, there are a number of issues facing businesses today as they move toward EDI and a greater reliance on information-based tools.

Some of these issues are, fear of the unknown, the perceived threat of technology, cost of implementation, inability to meet standards, security, and data control, and access issues, significant cost to participate in standards development organizations such as PDES, which consist primarily of major corporations.

There is a misconception that in order to participate in EDI, a company must invest heavily in building a large and complex computer system.

There is the issue of data security and integrity associated with direct computer access. Another associated issue concerns the ownership and control of data.

On balance, however, the majority of issues can be dealt with successfully by forward thinking and planning, regardless of company size.

The effective and efficient exchange of electronic data is a key element in addressing many of the productivity and quality issues facing U.S. businesses. New and better tools are rapidly becoming available. The Federal Government is involved in the proliferation of EDI and associated technologies through contractual terms with its suppliers.

The CALS Program is an excellent example of the Federal Government as a catalyst. Its role in the move toward wider use of EDI can become increasingly proactive by providing incentives and assistance to businesses, where appropriate technical assistance, formal training, and advice by the Small Business Administration, and communication of facts to all interested businesses can be instrumental in transitioning to EDI.

One of the most effective ways to accelerate implementation of technology that affects U.S. productivity may be to provide incentives through competitive procurements that recognize those organizations which are making the commitment.

Our experience in EDI has shown clearly that we must vigorously participate in the various standards development organizations and Government initiatives. This approach is mandatory to position us to efficiently and effectively support current and future Government and commercial business.

Problems associated with EDI are similar for both large and small businesses. Businesses who understand and harness EDI can compete far more successfully than those that try to ignore it.

Because it is based on technologies that will continue to develop and mature over time, it also creates opportunities. There are opportunities for organizations of all sizes to modernize, improve quality and responsiveness, and, therefore, become more competitive.

Also, EDI is creating new markets for developers of solutions to data interchange problems such as translators, neutral formats, software packages, and hardware devices. Undoubtedly, many of these products will be developed by small business entrepreneurs.

Our experience provides strong evidence that rapid incremental implementation of EDI technologies is both possible and necessary to establish and maintain a competitive position in national and international marketplaces.

Mr. Chairman, at this point, we will entertain any questions that you or the committee members may have.

[Mr. Kittelberger's statement may be found in the appendix.]

Chairman SISISKY. Thank you very much.

Ms. Payne, we will hear from you.

TESTIMONY OF JUDITH E. PAYNE, ASSOCIATE SOCIAL SCIENTIST, THE RAND CORPORATION

Ms. PAYNE. Mr. Chairmen, thank you for the opportunity to appear here today. I am an associate social scientist at the RAND Corporation. The views and conclusions I will express today, however, will be my own. They should not be interpreted as representing those of the RAND Corporation or any of the agencies sponsoring its research.

I am the coproject director of a RAND study to examine how the Department of Defense can use EDI to enhance defense logistics. The study is sponsored by the office of the Assistant Secretary of Defense, Production, and Logistics. Its summary report is now in draft form.

Based on the study analysis, there appear to be five promising ways EDI can be used to directly or indirectly improve logistics processes.

A significant obstacle to achieving benefits in these areas appears to be uncertainty about the effects electronic commerce will have on small businesses. This uncertainty needs to be addressed in order that DOD not be unreasonably hampered in its efforts to achieve the gains in efficiency and effectiveness offered by EDI.

It is important that DOD's approach to electronic commerce not introduce a barrier to qualified small businesses for at least two reasons:

One, by law, DOD is required to procure goods and services using full and open competition among all responsible sources, including small and disadvantaged businesses. In fiscal year 1988, 9 million DOD procurement actions were with small businesses for some $25 billion; 69 percent of all such DOD actions for work in the United States.

Two, for responsiveness during surges in demand especially, DOD needs broad access to as much of the U.S. industrial base as possible, including small businesses.

How does DOD's use of EDI affect small businesses?

The answer to this question will depend on how DOD implements EDI in specific applications and how its overall EDI infrastructure is designed. EDI can be used in many ways to actually reduce barriers to small firms conducting business with DOD.

For example, EDI applications can be designed to level the playing field between large and small firms by making information on buys as close as a modem and a personal computer; enable forms to be paid faster; and standardize transaction formats across the hundreds of DOD buying points.

In such ways, EDI can reduce the effort needed to do business with DOD for large and small firms alike. These capabilities may have a more positive effect for small businesses, for they may have had fewer resources than larger firms to overcome these costs of doing business with DOD in a paper-based environment.

In contrast, if DOD were to implement EDI to make only transactions and reporting on very large contracts easier, or in such a way that DOD vendors have to invest in specialized equipment and software, the effects could be detrimental to small businesses.

There is little systematic empirical evidence to date on the actual effects on small businesses of DOD's use of EDI or whether EDI poses a barrier to small businesses working with DOD. No comprehensive survey has been conducted, no polls taken, to answer this question. We do not know how many small businesses now use EDI. We do know several things that at least shed light on the question.

One, small and large businesses already face obstacles to doing business with DOD for which various mechanisms operated by DOD, and SBA, and others attempt to compensate. These firms sometimes have trouble finding out what DOD wants to buy; they have to use forms that differ across DOD's hundreds of buying points; they must follow prescribed steps precisely in order to get paid; and then sometimes have to wait months to receive payment.

For these and other reasons, some surmise that many firms, small and large, decline to do business with DOD already.

Two, roughly half of small businesses already have the basic hardware to send and receive EDI transactions.

In late 1989, we conducted a survey of the 42 vendors selling medical products to DLA for overseas medical facilities using SPEDE, an EDI system. All but one respondent was a small business. Half of the respondents already had PC's before SPEDE went online, and half already had modems.

Those implementing EASE, a procurement bulletin board for small purchases at NSC Jacksonville, anecdotally report that when they introduce EASE at meetings with small vendors, well over half of the vendors indicated they have the requisite equipment.

Three, for those vendors without these capabilities, the minimum hardware and software buy-in cost is roughly $3,460.

Ongoing costs to use EDI will vary widely depending on how DOD's electronic infrastructure for EDI is designed. If DOD were to provide free electronic mailboxes for interested vendors on a DOD-wide area network, WAN, ongoing vendor costs for telecommunications might be that of local phone calls.

Alternatively, a vendor could use a mailbox on a commercial WAN. Costs for this arrangement would vary based on the WAN's charging structure and any discounts negotiated by DOD or vendor groups. For example, NSC Jacksonville has negotiated a flat rate of $50 per month for EASE users to use CompuServe's commercial WAN.

So, $50 a month is a reasonable low-end estimate for a vendor using a commercial WAN. A high-end estimate could vary by level of usage. Each transaction might cost roughly 82 cents.

Are such costs above or below current transaction processing costs for businesses, large or small? We do not know. Postage alone for sending transactions via mail is likely cheaper than via EDI. But several large businesses have documented significant reductions in transaction processing costs using EDI. Again, it depends on how a firm implements EDI and how it conducted business beforehand.

Several SPEDE vendor respondents commented that using SPEDE to conduct business was more efficient and faster. Presumably, this translates into net cost savings. In fact, when asked how much they would be willing to pay monthly if a SPEDE-like system gave them access to more DOD buys, 27 percent reported they would pay up to $50 and another 18 percent over $100.

Four, our survey of SPEDE vendors also revealed several other points relating to this one EDI application's effects on its small business users.

On a scale of 1 to 5, 1 meaning much better and 5, much worse, 40 percent of respondents rated doing business with DPSC using SPEDE as 1 or 2.

Asked whether SPEDE was more reliable than a more traditional phone-based bidding system, 73 percent of respondents rated SPEDE as 1 or 2 on the same scale.

One-third of respondents noted that SPEDE was easier and faster than the pre-SPEDE procurement procedures which were already automated using a less sophisticated system, and 76 percent reported they would be more interested in SPEDE if it enabled them to bid electronically on RFQ's from other DOD buying points and even from non-DOD buyers.

Five, several of DOD's first EDI applications involve small businesses. Of 30 vendors involved in DCSC's successful POPS system, mentioned by Mr. Donnelly, for placing electronic orders for direct delivery of items, 16 are small businesses.

According to a DOD inspector general report, this EDI application also resulted in possible inventory savings of $11.2 million and reduced second destination costs by $732,000 in fiscal year 1985.

Despite projections for widespread use by the mid-1990's, most firms in the United States do not yet use EDI. We do not know how many small businesses use it, but in a recent survey across all firms, only 17 percent reported using EDI to even a limited extent.

In summary, given its cost to vendors, EDI would not appear to pose a significant cost barrier to doing business with DOD for most firms even today. In fact, many may find they receive net benefits from EDI in lower transaction costs and reduced barriers. But EDI is not yet a widespread business practice, so many DOD vendors may first use EDI as DOD extends its use of it.

There are several steps that DOD might take to use EDI to reduce costs and enhance effectiveness as well as benefit small businesses.

First, DOD can work with SBA, industry groups, and other interested organizations to determine whether EDI poses a significant barrier now to small businesses and, if so, to what extent, in what ways, and for what industries or types of businesses.

Second, DOD could work with these same organizations to demonstrate to small businesses alternative ways to use EDI and how to gain net benefits from its use. OSD is already pursuing this course.

Third, DOD's software, hardware, and telecommunications infrastructure can be designed to facilitate the use of EDI by small businesses. As DOD is now planning to do, this infrastructure should incorporate, to the extent possible, transaction and communications standards used by industry.

Again, as DOD plans, DOD should present a single face to industry, so vendors, large and small, have clearly defined points of electronic access to DOD's many buying points.

Fourth, this infrastructure for EDI should accommodate multiple telecommunications routes to DOD's electronic door for vendors, depending on their preferences. For example, some firms may want exchange transactions with DOD via electronic mailboxes on various commercial WAN's. Others may not be able to receive transactions in electronic form, but only via facsimile machine or even conventional mail.

DOD's EDI infrastructure can be designed to accommodate these alternate routes while minimizing, if not eliminating, the need for

DOD to maintain dual systems where EDI is the best form of transmission for DOD.

Thank you again for the opportunity to appear today. I would be happy to answer any of your questions.

[Ms. Payne's statement may be found in the appendix.]

Chairman SISISKY. Thank you very much.

What contributions do you think the Small Business Administration could make in assisting small businesses to become familiar with the Government programs on EDI?

Ms. PAYNE. I am not that familiar with SBA structure, although I know they have many offices around the country who are there to help small businesses thrive and do business for the Government.

Certainly, helping them learn how to use the tools already available within the Federal Government, within DOD, would help small businesses learn how to use EDI. They have an infrastructure already there which might be able to reduce—

Chairman SISISKY. While you were doing the research, did you contact SBA?

Ms. PAYNE. I did. I visited them.

Chairman SISISKY. Well, OK. No comment there.

Mr. Kittelberger, let me ask you a question.

Are you requiring your vendors now to be on EDI or do you think in the future you will be requiring them?

Mr. KITTELBERGER. At this point, we don't require them to be on EDI. We encourage them to do it.

As our contracts come through from the Government, and when they start to require everything to be electronic, we probably will start requiring that of our subcontractors, also.

Chairman SISISKY. Do you think in the future most of large business—or even small business—will be encouraging the use of EDI?

Mr. KITTELBERGER. I think, if you look back 5 years ago, there was a statement about manufacturing companies that anyone who didn't get into computer-aided design would be out of business. I think that is true with EDI today. If a company does not go into it within the next 5 years in a big way, so the company can pass electronic information to the other companies, they aren't going to be competitive.

Chairman SISISKY. That comes back to our research. I had thought the cost might be prohibitive. Of course, I was shocked at the cost you mentioned.

I think $3,400 is fairly reasonable to get in. Of course, in some small businesses, that wouldn't be reasonable, but the problem is that small businesses have to do business the way people want to do business, not the way they want to do business.

The world is changing. I think that is going to happen. Certainly, we can tell our Government, everyone must have equal access to doing business with the Government. But small businesses are not going to be competitive unless they keep up and get into EDI for both Government and private sector business.

Ms. PAYNE. Certainly, the costs I mentioned are for the equipment and software. If a small business wants to get advantages on its end and incorporate EDI transactions into its internal systems, it may need to invest in help or turn somewhere to get help with implementing systems.

They may also want to invest in more hardware. They will be using the hardware and software for other reasons within their business. These were the numbers that were from the vendors in SPEDE. Many of them already had small personal computers.

Chairman SISISKY. Mr. Kittelberger, of course, a lot of the things that are done contain classified information. Are there security risks in the electronic transfer of information?

How do you protect confidential information?

Mr. KITTELBERGER. Right now the way we are transferring information, if it is Government confidential, it is by tape. It goes by courier.

Just about all our electronic exchange at this point is by tape. We do a lot with Electric Boat and the Navy on the Seawolf design contract. Most of this information is the actual design of the ship itself.

We guard the information very closely. We have filtering programs that make sure what is coming out of the computers is exactly what we want to go on the tapes. We verify the tapes carefully, and we pass them to the next stop through the normal procedures that the Government has set up. One thing, if you are not dealing with Government-classified information, and the security of the data is still a concern, you go directly from computer-to-computer.

There is always the concern about how somebody taps in and picks up companies' strategic information. I think with the encryption that is out there today, and the new devices they are talking about, security is becoming more manageable. Encrypting entire computers is now being studied. I know IBM and some of the other manufacturers are working on that now, so everything that comes out of a computer will be encrypted. In other words, if somebody taps into a computer by mistake, they cannot start interpreting all the information.

I think the concept of making your people aware of security and the fact that someone could break into it, that by itself is a good protection. I think as long as you look at it, like we do with the Federal Reserve, when we pass information from the credit union to the Federal Reserve, we count the number of checks going out. They do it on the other end. We make sure viruses don't sneak in.

Chairman SISISKY. Mr. Torres.

Chairman TORRES. Thank you, Mr. Chairman.

I would like to raise a few questions with Ms. Payne.

You are from the RAND Corporation; right?

Ms. PAYNE. Yes.

Chairman TORRES. I read recently the RAND Corporation, after some decades of intensive studies on the nature of the world and all the scenarios that could take place given the cold war, the two superpowers, now because of what is happening in the world, RAND Corporation may be out of business?

Ms. PAYNE. I don't think so.

Chairman TORRES. Certainly, there will be a larger number of political, economic, and social scientists not really dealing with this question, but the heretofore question about the nature of the state of the world and possibly about the new challenges, things that are happening. That is why I am happy to see you here addressing a question—this futuristic—that obviously has a lot of potential for the future.

In your opinion, what should we do to better understand the actual effects of EDI on small businesses? You state it somewhat in your paper, those issues, but what should we do?

Ms. PAYNE. I think it is premature to look to any legislation to create an incentive because, ideally, if the Federal Government uses EDI properly, the incentive should be there, the gains should be there for small businesses.

There are several groups already working with the CALS Program as well as with DEO looking at small business issues. I think you have to look industry-by-industry. You have to worry, as Mr. Sisisky pointed out, about how the infrastructure for using EDI is put together.

There is a danger that, given all the innovations, EDI applications will go in different directions.

From the committee's point of view, I am not sure what action would be required. But, certainly, warning that a common infrastructure is important would be helpful.

Also, to ask SBA to monitor or look for ways to positively use EDI to help small businesses. There are also several initiatives looking at regulatory and statutory obstacles that inhibit the use of EDI.

There may be some that are in draft form now that the committee would be helpful with.

Chairman TORRES. Obviously, in studying this issue, researching this question, you just mentioned in passing the necessity for there to be an interfacing with SBA.

To what degree are you familiar with the various minority set-aside programs of SBA, DOD, or Government, for that matter, in which EDI could be an important factor for them to be more competitive?

By set asides, I mean the 8(a) Program, the small disadvantaged business programs where minorities in this country—blacks, Native Americans, Hispanics, women, Asian Americans—have a different set of standards at which they can participate in Government programs?

How would you see EDI helping them?

Ms. PAYNE. It would give the more competitive ones a leg up, I think. It would level the playing field.

As I mentioned in my testimony, as we are seeing in SPEDE and EASE, where businesses around the country, including small businesses, are easily able to tap onto and bid on more work that the DOD is offering.

Right now, purchases under $25,000 are set aside for small businesses to respond to competitively. By convention, the Federal Acquisition Regulation requires only three vendors be tapped so that bids can come in. That is based on assumptions about a paper-based world.

Given electronic data interchange, that can be opened up much more to a lot more businesses being able to bid on work, find out about work that is there, and take an opportunity to bid on it, and find their niche in Government work, or understand why their bids are unsuccessful.

The SPEDE world, in the SPEDE application, the vendors especially like receiving electronically the bid information, the winning bid information back, so they can analyze why they didn't win, and who did win, and why.

They especially appreciated seeing that. It was all technically available to them in the past, but it was very difficult to get. There was a lot of inertia in the way.

Now, the vendors can get it right away. Many of the vendors thought SPEDE had changed its bidding procedures already which it hadn't. It is still only asking three vendors to bid at once. The vendors were reporting changes in the way they bid on work.

In the private sector, there is a salvage yard industry that has many small businesses in it that depend very heavily on EDI-like systems to broadcast needs and to match vendors with demands. So, it could happen with DOD using something like EASE, but even putting in more in electronic form so small vendors everywhere could tap into it, be they disadvantaged or small, tap into the market of DOD much, much easier than now.

There are bidder services out there that offer information electronically. They are not allowed now in most cases to send bids in electronically.

Larger firms are able to subscribe to such services much easier and actually have people to tap into the Commerce Business Daily which is in hard copy form.

All that can be put in electronic form, sorted, and delivered in various forms to small businesses.

Chairman **Torres**. Much like Chairman Sisisky, I am surprised, and I am encouraged, of course, by your cost projection of $3,400 for a small business to sign up on a EDI program like the EASE one down in Jacksonville.

Would you favor DOD providing mailboxes for vendors?

Ms. **Payne**. That is one alternative. Many vendors may not want that. They would not necessarily want a separate electronic mailbox for their DOD business if they already have a mailbox, which many of the SPEDE vendors have.

It turns out many of them already have ones on commercial VANS. They might prefer to use those.

I see it as just one more way of addressing EDI transactions to them. The CAGE system DOD uses to identify a vendor has an address and standard information that could easily include the preferred electronic address of a vendor.

So, if they didn't have a mailbox, they could perhaps have one on the DOD phone system or wide-area network. I would not see that as a requirement, but one alternative for smaller businesses.

Chairman **Torres**. Let me return to the question of security raised earlier. I want to raise it with you.

Are the commercial mailboxes like CompuServe secured communications?

Ms. **Payne**. Many businesses use them as if they were. Certainly you can have the kind of controls that this gentleman mentioned for making sure that you receive what you thought you should receive and you sent what actually was received. Internally, businesses have relied on computer systems for many years.

There has been quite a development of computer audit procedures. Those can be extended into the inter-organizational exchange of data. DOD does have an additional problem of worrying about sensitive information being much more accessible and becoming sensitive but not classified. We are concerned about that at RAND and that issue has not been addressed fully, given that EDI could put information that would be in the CBD much more electronically accessible to others.

Those kinds of things have not been addressed by the commercial VANS, because they don't have to worry about those kind of aggregate data problems.

Chairman **Torres**. Mr. Chairman, I have no further questions.

Thank you.

Chairman **Sisisky**. Thank you.

Mr. Kittelberger, you use 16 tons of paper, 18 tons. Sounds like the 1986 Tax Reform Act.

What do you think you will use on the Seawolf? Was it in your testimony?

I read your testimony on the plane this morning.

Mr. **Kittelberger**. That has not been determined.

Chairman **Sisisky**. It should be less?

Mr. **Brake**. Mr. Chairman, we expect a major reduction in paper by both its volume and weight. There are problems concerning where it is stowed, how we are going to get to it, and actually use it and keep it updated. Since the Seawolf Program is a major CALS weapons systems demonstration platform, there is considerable emphasis on the creation of paperless technical documentation. The owner's manual, if you will, the maintenance manual, the training data, overhaul information, and so forth, and so on, is all being attacked in such a way that it can be handled electronically.

We have a culture change that has to take place to accept, use, feed, and care for that data in electronic form. This all constitutes considerable change both for the vendors involved and, as Larry pointed out, it is multiple vendors, and for the user of this data over the potential 40-year useful life of this weapons system.

Chairman **Sisisky**. I can assure you it is not my generation that is going to change. But this is what makes America great, moving forward.

I was just sitting here thinking if this thing really just sweeps the country, then you sell your paper stock short. Or your filing cabinets.

Chairman **Torres**. If you will yield, Mr. Chairman. Think about EDI having an environmental component, less paper, more trees.

Chairman **Sisisky**. That is true.

I thank all three of you for coming here this morning. You have been very helpful. We do appreciate you being here.

Mr. **Brake**. Thank you.

Mr. **Kittelberger**. Thank you, Mr. Chairman.

Chairman **Sisisky**. Next we are looking forward to hearing from representatives from the small business community. We have with us today Mr. Guy Bilodeau from Electric Motor and Contracting in

Chesapeake, Virginia, and Mr. Ray Fuentez, of Fuentez Systems, Inc., in Fairfax, Virginia.

Mr. Bilodeau, I am especially happy to see you. You are from a business from my congressional district in Virginia. I give both of you a very warm welcome.

TESTIMONY OF GUY L. BILODEAU, ELECTRIC MOTOR & CONTRACTING CO., INC.

Mr. Bilodeau. I am Guy Bilodeau from Electric Motor and Contracting. We are a full-service electric—

Chairman Torres. Would you move your microphone closer to you?

Mr. Bilodeau. We are a small business that services the greater Tidewater area in Virginia. Although our primary business is electric motor repair, we are a full-service electric repair and contracting business.

We also have an outside service department, which performs a variety of electrical control work on civilian and military facilities.

We have a large stock of electrical items for sale such as motors, repair parts for motors, and wire.

Our customer base covers almost all branches of the Government and a full spectrum of industrial businesses.

Our diverse customer base makes us a prime candidate for electric interchange. We have over 1,000 customers and almost 500 vendors we deal with.

Our first motivation to become EDI compatible was from our participation in a seminar with Champion Paper Co. in which concepts of EDI trading and its advantages were explained.

This seminar showed the ease of starting a pilot program in which we could realize the time, labor, and money savings of EDI.

The selling points that were important to EMC were the system would be easier to use, secure, inexpensive, and ultimately save our company money. The system that was demonstrated was very simple to use.

The system does not allow direct access to our computer systems which provide the security we were looking for.

The cost of starting up an EDI system was well within our company's budget. With the potential benefits of EDI, we decided to start a pilot program with Champion Paper to determine the feasibility of implementing a large EDI system.

After a test was sent from Champion Paper Co., our EDI system has worked flawlessly. We have moved cautiously with our EDI pilot program in order to avoid overextending our capabilities at any given time.

We now plan on adding several new trading partners in the next few months. We use a third party EDI system with a company called Harbinger Computer Systems. That is the third party in our transmissions.

Our system runs on a desktop IBM PC compatible with a 2400 baud modem, a printer, and a monitor.

The software we use is called In Touch EDI, which was written by Harbinger and is a totally automated system.

Our documents are all handled in ANSI X12 standard. Already having the PC, printer, and monitor, all we had to do was purchase the modem and the EDI software, which was a total cost of less than $700.

For the last 12 months, we have been trading with Champion. We received purchase orders, change of purchase orders, and sent acknowledgments and invoices relating to those purchase orders they sent to us.

Now that we are confident in the future of EDI, we are preparing to extend to multiple partners and expect to increase our savings in time and labor. The time and labor savings come from less paperwork and fewer duplicated actions.

We will be able to eliminate a considerable amount of time spent filing, mailing, receiving, and tracking down the mass of paperwork we get from our 1,000 customers.

At this time, we still waste a considerable amount of time with our drivers dropping off documents, picking them up, picking up requests for quotations. We feel that the growth of EDI will continue.

We are hopeful that large business and Government agencies will help small business develop their EDI capabilities. In Electric Motors and Contracting's case, Champion Paper Co. has helped EMC greatly in our efforts to become full EDI capable.

The adoption of the Government standard that is compatible to ANSI X12 will make the adoption of EDI by small business much easier. As with one of our customers who insists on an electronic transfer of data conforming to their special specifications, any deviation from ANSI X12 costs both trading partners money. Each nonstandard trading partner diminishes the benefits of EDI to both users. If no common industrial/Government standard is developed, it will bring extra financial burdens to small businesses that do work in both sectors, and will slow the growth of EDI.

[Mr. Bilodeau's statement may be found in the appendix.]

Chairman **Sisisky**. Thank you.

I talked about introducing Mr. Fuentez. I see Mrs. Pat Fuentez is here, also. Welcome to both of you.

TESTIMONY OF RAY AND PAT FUENTEZ, FUENTEZ SYSTEMS, INC.

Mr. **Fuentez**. It is indeed an honor and great pleasure to be here today.

As a minority-owned business specializing in advanced software engineering, automated message handling, database management systems, electronic warfare, and command control communications and intelligence, C3I, we welcome this opportunity to speak before your subcommittees today on an issue of obviously vital importance to the continuing economic viability of small and disadvantaged business.

As a company which is very concerned about the impact of new and emerging technologies on small business, we have become very concerned about the impact of electronic data interchange technology on technically oriented minority firms like ours.

The future impact of EDI technology is not only inevitable, but could be very desirable as well. We are impressed with the foresight your committees have shown in calling these hearings to assess the impact such technology may have on small successful businesses such as ours.

The simple facts are that many Fortune 500 companies are already very heavily involved in creating paperless work environments. The marketing and economic advantages such networks have generated for these companies are already considerable.

However, it is important to point out that as the technology improves, EDI also threatens to widen the competitive gap between big and small businesses. The reason, quite simply, is that costs associated with many of the best of these systems, very hardware oriented systems, are considerable, and in many cases, out of the economic reach of many small businesses.

Your committee is obviously cognizant of the fact that small business is quite literally part of the economic backbone of the United States. In spite of the fact that much attention has been historically focused on Fortune 500 companies, our American free enterprise system is virtually dependent on those 19 million small businesses, like Fuentez Systems, which employ over half of our Nation's workers.

This being the case, any analysis of the potential impact of something as important as EDI technology must be studied and analyzed in terms of how both small and big business will function in the large national, and for that matter, international EDI picture.

EDI means total management through standardization and elimination of paper, so that access to information becomes virtually instantaneous. It is obviously vital that all segments of Government recognize small business' considerable contribution to our Nation's economy, and understand the absolute necessity of developing an economic climate that ensures their continuing growth.

Government, by virtue of the great numbers of transactions that it annually makes, will be a driving force in EDI technology.

There are today, rather comprehensive efforts throughout the Government to implement EDI, and there is some evidence that some branches of Government are beginning to develop an awareness of the impact the technology will have on the small and small and disadvantaged business owner.

Congressman Torres, you and your subcommittee have always demonstrated a strong support for small and disadvantaged business. You have always, very obviously, been aware of the critical role minority-owned small businesses have played in the economic vitality of both our black and Hispanic communities.

As an aside, this past Saturday, the New York Times, in a page one story, ran a piece which underlines the economic imperative our Nation and you, our lawmakers, have to insure the economic vitality of our country's rapidly emerging Hispanic communities.

A fascinating new book, "The Burden of Support: Young Latinos in an Aging Society" makes some rather compelling arguments for the fact that "the future economic well-being of the Anglo population significantly hinges on the productivity of a largely non-Anglo work force."

We know that you, as a Californian, realize that the vibrant prosperity of California has drawn and rewarded many waves of migrants, both American and foreign, and yet many analysts now see a gloomy alternative prospect if more is not done to absorb the State's fast-growing Hispanic work force.

Over the next 30 years, one vision goes, the Hispanic population will swell while the white baby boom generation retires. Failed by the schools and stuck in low-paying jobs, Hispanic youths will become frustrated and angry. Unable to find skilled labor, industry will flee and the California economy will crumble.

By the turn of the 21st Century, the vision continues, most Latinos will live in squalid towns without paved roads or electricity and stagger under heavy taxes to support Social Security and other old-age benefits for retired whites, who retreat into walled villages.

While this vision is a worst-case scenario, such an outcome is not beyond the realm of possibility, the Times article continues.

The increasingly insistent question that you and other Members of Congress face is whether Government, business, the schools, and minority populations themselves can take the steps necessary to educate Hispanic young people and integrate them into the American economy—something the minority small business community has historically proved to be very adept at.

In your congressional district, Congressman Torres, where Hispanics are primarily of Mexican origin, strong family ties and a strong work ethic offer hope if Government and business can ensure education and meaningful employment for the State's burgeoning Hispanic population.

But this can truly only happen in an environment which protects the economic vitality of small and small and disadvantaged business.

In late 1989, the Assistant Secretary of Defense, Jack Katzen, testified that the application of EDI technology can achieve benefits in the order of $10–$17 million per year in processing bills of lading alone throughout DOD. Such savings insure EDI's future within the Government procurement bureaucracy, and we strongly support his and other technical enhancements, such as EDI, which are capable of creating such cost savings.

However, we must all be careful that in pursuit of such savings, small and small and disadvantaged businesses are not inadvertently eliminated from the procurement process. Small business must continue to have the capability to participate in vendor searches, selection, and contract awards, either through paper or the electronic means existent in a paperless society.

The key here is cost.

Small businesses like ours can make the greatest contributions and continue to succeed in an environment where we are afforded the opportunity to acquire and/or gain access to the hardware, software, and training absolutely necessary to operate in the very hardware-oriented EDI environment.

Fortune 500 companies, which possess complex buying infrastructures, must move to accommodate the smaller trading partner in such an environment. Information is the key to success in an increasingly global marketplace. Many of the elements of the program that you refer to as American 2000, certainly demonstrates your awareness of this face.

We implore you to consider creative ways to insure the participation of small business in such an economy.

Thank you.

Chairman **Sisisky**. Thank you, Mr. Fuentez.

I just assume what you are really talking about is to be sure that the minority and disadvantaged businesses are being given every opportunity to be informed and participate before we go into a program. Am I correct in that?

Mr. **Ray Fuentez**. Our main concern, especially in companies like mine, is that we maintain a relative awareness on par with our competition; and if we can't afford the data sorters and the equipment to electronically handle this information, then in your terms, we are not really playing the same game.

If we have to wait until we can sort through our copy of Commerce Business Daily to find out that an opportunity is in the street, but our competition has known about it through some other electronic means for months, then we are starting from well behind.

We have that as our primary concern, that because our larger competitors—and this particularly applies to people providing software support, assistance engineering support to the DOD—increasingly we are competing with firms like, and I admire them greatly, Lockheed, McDonnell Douglas, Hughes, firms that have the wherewithal without really making much of a sacrifice on their part to instill management and information management systems that we really cannot compete with.

So, as we and Government move toward the paperless environment—and I certainly see no advantage to small business to slow it down—I think we should keep in mind alternative ways to get that information to them. Somebody mentioned the use of modems. They are beautiful. They give the access to distribute power.

I believe that if some small fraction of the Navy, or the Air Force, or the Army acquisition commands give attention to perhaps providing one of their own terminals with a modem that can be accessed on a time-shared basis, even if we have to pay for it, by the smaller members of the business community, that would be a very positive first step.

Chairman **Sisisky**. The problem with that premise, as I see it, we can, as a Congress, control somewhat the access to Government. In other words, we can guarantee the Government agency will give you access to the information.

The problem is we can't control the private sector companies. Somehow or the other, we have to transfer the message to the small business community that if you are going to be competitive, then you better get with it. Because this is bigger than the Government, as I view it.

Yes; the Government does have a role in that, but I don't know how much role.

Mr. Bilodeau, your company is a small company. How many employees do you have?

Mr. **Bilodeau**. Right now, about 130.

Chairman **Sisisky**. About 130? You do more than business with the Government?

Mr. **Bilodeau**. Oh, yes; we do programs with all branches of the Government and industry in the area.

Chairman SISISKY. How long have you been involved in electronic data transfer?

Mr. BILODEAU. About a year.

Chairman SISISKY. How does your company view it from a profitability standpoint? Have you gotten more business because of it, that you can see?

Mr. BILODEAU. Well, we started the pilot program with Champion, and the basic statement was we won't withhold business from you for not going on to EDI, but it certainly makes our business transactions easier, so take it from there.

Chairman SISISKY. That is what I was basically driving at. How about other suppliers? How about the Federal Government business?

Mr. BILODEAU. Well, one of the problems is that a lot of companies have proprietary systems they have developed that are in no way compatible with the EDI system we have. We have had solicitations from some to link up with them, but you have 1,000 vendors. You figure probably 500 have computer systems.

I don't have the time, and the company doesn't have the money, to hook up to 500 different proprietary systems and work with every Government agency.

Chairman SISISKY. That is what I was talking about, uniformity where the access and participation would be fairly simple. I didn't even know what I was talking about, but I think that explains it pretty well.

Mr. Torres.

Chairman TORRES. I think Mr. Bilodeau's company is an example of a typical small business. I hope others have the same experience you have. You seem to be moving up, and 130 employees is not too bad. That is a hefty amount of people.

I would say that by helping you develop your EDI capabilities, Champion Paper helped themselves, too. Everyone, including the consumer, benefits from this whole transaction.

Mr. Fuentez, you are involved in some rather heavy type of work, data base management systems, electronic warfare, command and control communications, intelligence. That is pretty heavy activity. Are you an 8(a) certified contractor?

Mr. RAY FUENTEZ. Yes, sir; we are.

Chairman TORRES. As such, tell me, the work that you are doing now in these areas I just cited, are these Government set-aside programs with DOD?

Mr. RAY FUENTEZ. They were all DOD. About half of them are set-asides. The other half we won competitively.

Chairman TORRES. What has been your experience then in this realm in working with what is called the Sabu officers, is it?

Mr. RAY FUENTEZ. Yes, sir.

Chairman TORRES. Is it good? Is it bad? Are they responsive? Are they not responsive? You cited some issues in your testimony that would tend to lead me to believe that perhaps they are at arm's length sometimes with you?

Mr. RAY FUENTEZ. I think that they are all sincerely interested in doing a very good job and that they are hampered a lot of times by their own procurement activities. My experience has been more with the DOD and more specifically with the Air Force and the Navy.

In the Navy specifically, there seems to be some conception that there is some sort of competition between contracts and small disadvantaged business liaison officers, that somehow is working against us. It is almost like you have to convince contractors and you have to convince the Sabu to go up there and argue your case.

Let me say, though, before I let anyone draw conclusions from that, that in the areas of electronic warfare, command and control, intelligence systems, there is a need. It is a very real need to limit the dissemination of certain sensitive information.

I believe that part of our contracting mechanisms work against the Sabus when they try to have programs or part of programs set aside for 8(a) firms. There is always the question of, in the interests of greater national security issues, is this properly a set-aside?

So, other than that, though, I really do not want to sound like I am complaining. The system works very well. The people who I have worked with in the Navy are all very truly dedicated professionals. It just seems to me like there is a little bit of unnecessary competitiveness between them trying to do their job and contracts trying to satisfy their CICA—Competition in Contracting Act—requirements.

Chairman TORRES. I have no further questions, Mr. Chairman.

Chairman SISISKY. Thank you.

I thank all the witnesses here today. This has been a most enlightening hearing. I don't think you will hear the last of this. Certainly I can see some work in the next year or two on this.

Mr. Torres, if you would like to close the meeting?

Chairman TORRES. Thank you, Mr. Chairman.

I, too, want to first of all commend you once again for having joined with me to call forth for these hearings. This is important, as you heard from Mr. Dreyer this morning, that this is the first time two congressional subcommittees held hearings in this area of technology.

I believe, as Mr. Sisisky said, it is not going to be the last. This is an issue that is going to be with us in the future. I was highly enlightened by what was said here today by the many panelists. Certainly, these last two witnesses portray the trends for the future to me.

But the small business person out there, the one we are talking about, the 19 million who sometimes feel locked out of the system because they don't have access, I hope the EDI systems as we talked about here, the development of the type of software, will enable them to be participants in this process, with their larger trading partners.

As I said earlier, we owe a debt of gratitude to the association for doing this. We owe a debt of gratitude to you for being here and giving us this information. We will take this, and we will analyze it. We will work on it. We will try to legislate in an objective manner so the process can work as we meet the challenges of the future.

Thank you very much. Mr. Chairman, do you want me to adjourn? You opened it, I will close it. Thank you very much.

[Whereupon, at 11:40 a.m., the subcommittees were adjourned, subject to the call of the Chair.]

APPENDIX

JAMES H. BILBRAY
1ST DISTRICT, NEVADA

COMMITTEE ON
ARMED SERVICES

COMMITTEE ON
SMALL BUSINESS

SELECT COMMITTEE
ON AGING

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Congress of the United States
House of Representatives
Washington, DC 20515

OPENING STATEMENT OF THE HONORABLE JAMES H. BILBRAY
COMMITTEE ON SMALL BUSINESS
SUBCOMMITTEE ON EXPORTS, TAX POLICY, AND SPECIAL PROBLEMS

June 18, 1990

I would first like to commend Chairman Sisisky and Chairman Torres for calling today's hearing.

It is clear that electronic commerce will soon be the norm for most businesses in this country. The benefits of paperless business transactions are enormous, and they will increasingly become necessary for businesses to compete in the global economy.

The benefits of implementing electronic data interchange (EDI) throughout our own federal government appear to be dramatic. Perhaps the greatest criticism of our federal government that I hear from my constituents is the tremendous amount of waste that is generated by the huge federal bureacracy. The move to implement EDI in the various federal agencies is perhaps the most promising strategy to combat the waste problem affecting our government. As a member of the Armed Services Committee, I am particularly interested in the impact of EDI throughout the DOD acquisition process.

I look forward to hearing from all of our witnesses today, and I thank both chairmen for calling today's hearing.

Opening Statement by Representative Andy Ireland (R-Fl)

June 18, 1990

Mr. Chairmen, I commend you for convening this hearing which will examine an issue on the cutting edge of the future of small business. Electronic Data Interchange (EDI) is the computerized exchange between businesses of standard documents such as invoices, order forms and shipment notices. The implementation of EDI in business has been shown to reduce clerical errors, improve productivity and save valuable time and money. It is obvious that we should encourage the growth of programs such as EDI but we also must watch out for what will happen to small business.

Many large corporations have started using EDI in their business with private industry and government agencies. The federal government must also take advantage of this technology to maintain competitiveness with major trading partners. Some small businesses are being forced to use EDI by large partners under the threat of losing big contracts. Other small businesses would like to implement the program but do not have the knowledge or means to do so. There is a need for a generic approach to the implementation of a system for the government and private industry that is accessible to small businesses as well as large corporations. The increased use of EDI in the business world will have a negative impact on the small business community if they do not have the same opportunities as big corporations. The government must be sure small business is aware of the growing need for computers to conduct business. One advantage for small businesses involved in EDI is a larger market for their products and services. In the upcoming age of electronic commerce we need to be certain small business will not be barred from participation in EDI and be capable of remaining competitive.

I am pleased that both committees are looking into the issue of Electronic Data Interchange. This shows tremendous foresight as EDI is a very important issue of the future.

TDCC
EDIA
20 years of leadership

WRITTEN STATEMENT OF

JEROME L. DREYER, PRESIDENT AND CEO
TDCC: THE ELECTRONIC DATA INTERCHANGE ASSOCIATION

BEFORE

THE JOINT HEARING OF THE HOUSE SMALL BUSINESS SUBCOMMITTEES

ON

ENVIRONMENT AND LABOR

AND

EXPORT, TAX POLICY AND SPECIAL PROBLEMS

JUNE 13, 1990

The Electronic Data Interchange Association
SUITE 550 • 225 REINEKERS LANE • ALEXANDRIA, VIRGINIA 22314
(703) 838-8042 • FAX (703) 838-8038

Good morning Chairman Torres, Chairman Sisisky and members of the Subcommittees.

My name is Jerome L. Dreyer. I am President and Chief Executive Officer of the Electronic Data Interchange Association (EDIA). I am pleased to appear before these joint hearings on behalf of our members.

EDIA is a trade association founded in 1968 and dedicated to fostering the development and implementation of electronic data interchange (EDI). EDIA serves as the primary forum for the users of this technology, as well as vendors who provide software and services for EDI.

Our membership consists of over 300 organizations, from private industry and government. More than 65 percent of our member organizations would qualify under the Small Business Administration's definitions of "small businesses".

Electronic data interchange is ONE form of computer-to-computer interaction among enterprises as well as government agencies. It is not a fax or electronic mail, but the exchange of strictly standardized, electronic versions of common business documents. These documents include, but are not restricted to such items as purchase orders, invoices and shipment notices. EDI allows reams of paper to be condensed into a series of keystrokes which are transmitted between trading partners who have reached agreement on the manner in which they will conduct business. (I've brought along simplified illustrations of the way this is done.)

EDI impacts organizations from all points of the world across a broad spectrum of industries and government. Industries utilizing EDI in their daily operations include banking, healthcare, grocery, retail, chemical, automotive, electric, air, ocean, motor, rail and others.

Some government agencies utilizing EDI are the Department of Defense, the General Services Administration, the Customs Service, the Veterans Administration and the Environmental Protection Agency, to name a few. The Internal Revenue Service is using EDI, enabling individual taxpayers to file and receive refunds. Although business filings are not yet there, this is a significant start. In addition, EDIA is currently assisting the U.S. Postal Service with their strategy for implementation.

A survey by a market research firm specializing in computers, INPUT, reports that more than 50 percent of the FORTUNE 1000 firms are currently using or actively implementing EDI. Another 24 percent are considering EDI. In addition, INPUT reports that expenditures for EDI, including software, value-added networks and professional services, were $208 million in 1988 with a projected growth rate of 56 percent annually to reach $1.9 billion in 1993. (This forecast includes the coupling of EDI and Electronic Funds Transfer.)

In order for EDI to fulfill its promises, though, it must permeate all levels of enterprise. It must be embraced and used by the small business commaunty as a strategic tool, not as an imposition from on high or ultimatum by larger trading partners, be they commercial, state or Federal Government.

As with any technology, various costs and benefits occur with its application. Because of the small business community's contribution to the Nation's economy and workforce, EDI's impact and influences on these businesses will have a far-reaching effect. The effect will be felt in the commercial and government sectors.

As you know, downsizing of the Defense budget, due to recent peace-initatives, the proposals to reduce the Nation's deficit, and the possibility of revenue enhancements (or what I USED to call increased taxes) will put even more pressures on the small business owner to:

- compete, as efficiently as possible,
- work harder to find new markets, and
- enable personnel -- especially those in the personnel-starved service industries -- to work at peak performance levels.

EDI is a management tool that improves the global competitiveness of EVERY U.S. company, large and small alike.

It can, by reducing the overhead of a paper transaction -- that is, the preparation time, physical transmittal of that paper, and corresponding time and error delays --- dramatically increase the efficiency and costsavings in both government and industry.

By coupling EDI with business practices such as Just-in-Time and Electronic Funds Transfer, it creates competitive advantages by allowing:

- greater flexibility to create or address new market opportunities, both domestically and internationally,
- the possibilities for new products and services,
- improved, timely movement of goods,
- improved fiscal management and cashflow,
- better management of information and strategic corporate planning using the theory that fast, accurate data enables rapid and intelligent decision making to attain advantages in the world markets.

EDI, of course, is one component of the entire business cycle movement into automation. Like everything we have in the management tool box, it does require technological and cultural adjustments. But EDI has the advantage of riding on the crest of a very large wave. How many in this room remember when computers were BIG boxes kept in locked glass rooms where only the TECHY could work his magic to create the data you needed?

Now, menu-driven programs installed on pc's sitting in your home "walk you through", enabling you to track your checkbook balance, prepare your tax return, or assist your pre-schooler with improving his or her reading skills. We've come a long way with technology and so has the small business person. BUT, EDI will not evolve at the steady, almost studied, pace of information processing. Everyone recognizes that information is power. Trying to control the velocity of the growth of the technology in the very near term will be a little like trying to sip from the firehose.

Goverment, both state and Federal, will also need to continue expansion of its use of EDI in order to become as efficient and economical as possible.

However, as government and major industry move to the natural course of EDI to meet the demands for reduced overhead and greater profit margins, we must ensure that this technological wave does not create a dangerous undercurrent. Those organizations moving into EDI must take care that their smaller business partners benefit from the method in which they are brought into the EDI world. As computer literate as some small business owners may be, EDI has not yet reached the "automatic" levels of placing a phone call or transmitting a fax. Neither has it become an automatic part of the accounting, inventory and physical distribution systems within all businesses, especially small businesses. But, that is soon coming. All of us are working on the challenge of making that transition as painless as possible for the small business owner and his and her larger trading partners.

Dictating large, up-front investments, either in software, equipment, or communications functions could result in undue burdens on the small business community. In addition, those who are unable to transition smoothly could be locked out of opportunities so that they'll never be able to catch up. It could restrict their access to commercial markets -- both domestic and international -- Government contract bids, and affect growth and economic health.

WE STRONGLY RECOMMEND THAT:

* every incentive possible be given to those small businesses attempting to enter the EDI world.

* consideration be given to incentives for those large business partners creating programs to integrate their smaller business partners in a positive manner.

WE URGE:

* that these two Subcommittees, as well as the full Committee on Small Business support Government programs to accommodate small business participation in EDI,
* examine the government programs currently in place,
* support other legislative activities which address positive changes to U. S. Codes which will ease the use of EDI by the small business community,
* and, promote the use of EDI within the Federal

government to reduce the cost of governing and the costs of doing business with the government.

Again I stress, with budget deficits staring us in the face, and with increased taxes as the traditional method of easing this burden, let us be a little more creative and turn perhaps to the technology of promise -- EDI -- to help us increase business in the private sector and reduce sigificant costs in Government.

EDIA recognizes in this time of budget constraint that some of these recommendations will entail further expenditure of funds, but the Association is firmly convinced that the ultimate rewards of competitive advantage and long term viability, for both industry and government, far outweigh the initial investments.

Voltaire once advised that "God is on the side, not of the heavy battalions, but of the best shots." We must work together to make each small business, as well as its larger trading partners, the best shots!

We look forward to working with all of you, as well as the Executive and Regulatory branches, to assist small business in this endeavor.

Once again, thank you for the opportunity to present our views on a topic that is quickly becoming crucial to the continued success of the small business arena.

STATEMENT OF VICKI L. HODZIEWICH, DIRECTOR
OFFICE OF TRADE INITIATIVES
UNITED STATES CUSTOMS SERVICE
BEFORE
THE SUBCOMMITTEE ON EXPORT, TAX POLICY, AND SPECIAL PROBLEMS
AND THE SUBCOMMITTEE ON ENVIRONMENT AND LABOR
COMMITTEE ON SMALL BUSINESS,
UNITED STATES HOUSE OF REPRESENTATIVES
JUNE 18, 1990

Chairmen Torres and Sisisky, it is a pleasure to come before this joint subcommittee and talk about electronic interchange and the Customs experience in developing and using its proprietary standard, industry standards and now the emerging global standard - United Nations Electronic Data Interchange for Administration, Commerce and Transport (UN/EDIFACT).

I am but one in a long list of individuals who have come before this Congress to talk about change. One such individual was Vaclav Havel, Czechoslovakia's first non-Communist president in more than 40 years. In February of this year, Havel spoke some very profound words about change before a joint session of this Congress. Havel said:

> We live in very extraordinary times. The human face of the world is changing so rapidly that none of the political speedometers are adequate.

Like Havel, I am coming here to speak about change. In this dynamic world we inhabit, the speed of change Havel referred to also characterizes trade and technology. While it is not always possible to anticipate change, be it political, economic, or technological, U.S. Customs is always trying to do so. What is more, we are constantly implementing new systems and procedures to facilitate the flow of legitimate trade.

Workload Expands.

Ten years ago, Customs faced a rapidly expanding workload in processing goods entering U. S. markets under Customs laws and regulations and those of 40 other agencies. While imports were expected to double, no such parallel increase was expected in the Customs work force.

The import trade, like Customs, was awash with paper forms -- manifests, invoices, certificates, visas, Customs declarations, permits and releases -- that were impeding the flow of goods and driving up costs.

Automation a Solution -- ABI.

Customs, in consultation with organizations in the customs brokerage and carrier industries, developed a plan to move away from paper toward fully electronic transaction processing.

The first successful effort in this regard was called the Automated Broker Interface (or ABI), which permit firms to file Customs entry declarations electronically, following the rules of a Customs proprietary syntax. Additionally, edit and validation routines were to be incorporated in the sender's systems to assure clean and accurate data for Customs processing. In return, Customs promised to speed up the processing of imported cargo and to gradually move away from paper to full electronic processing.

The first transmission of entry declaration data from a broker to Customs was in February, 1984. Today, 82 percent of all formal entry declarations are filed electronically by nearly 1,000 brokers and importers from over 200 ports of entry. The variety and range of electronic transactions has greatly expanded and includes queries, file extracts, other government agency data, foreign exchange rate data, electronic payment of daily statements, tariff system updates -- over 50 different transactions.

Carrier Automation -- AMS.

The first transmission of ocean manifest data from an ocean carrier to Customs was in July, 1986. Today, ocean manifest data, representing 75 percent of all ocean tonnage, are filed electronically from some 43 steamship lines.

The first air manifest transmission was received in October, 1989 from a carrier in test. Our testing program is still underway with 4 airlines, a software vendor, and a deconsolidator. We are currently receiving 12,000 air waybills per week at JFK Airport and next week we are expanding to other airports.

ABI & Other Syntaxes.

In the case of ABI, there was no universally accepted syntax or language of communication. Customs and the brokers settled on a very simple fixed-format language for sets of transaction records 80 characters in length. It was familiar to most firms with any automation experience, easy to program and change, and transaction sets could be edited during the process of receipt.

However, the ocean and air carrier industries were beginning to use variable format languages -- the Transportation Data

Coordinating Committee (TDCC) transaction sets for ocean manifests and Cargo Interline Message Procedures (Cargo IMP) for air. The Ocean Manifest Message syntax is now under the auspices of the American National Standards Institute. Customs has supported these standard messages, along with our own proprietary ones. We convert them into 80 character records for processing, and re-convert them to each user's preferred syntax to return messages.

Effect of Move to Automation.

The effect of moving to electronic modes of conducting business between Customs and members of the trade has been dramatic. Industry data for Customs review is presented much earlier, review is faster, and cargo is provisionally authorized for release in minutes rather than days or weeks, often while the cargo is still in transit.

Data Quality & Accuracy.

In 1984, Customs and brokers were both re-processing transactions caused by data errors at the rate of 1 out of every 6 entries. Last year, re-processing was required for only 1 out of 46 entries. In 1984, 900,000 entries were re-processed, compared to 190,000 in 1989, even though we were handling 3.6 million more entries. Data quality and accuracy, as well as speed of processing, account for much of the productivity gain.

Productivity & Cost Avoidance -- Customs & Trade.

A joint study of Customs Automated Commercial System (ACS) by the Treasury Department and the Office of Management and Budget in 1987, updated in 1988, showed that Customs was making productivity gains of over 10 percent per year, was avoiding $387.4 million in personnel costs for 6,456 positions saved in 1988, and was saving annually another $194 million in operating costs.

The brokerage industry was realizing equivalent efficiencies. In 1985, there were 1500 active brokerage firms. In 1989, that number had grown to 1700, an increase of 13 percent. During that time, imports increased 30 percent and broker market penetration increased from 95 percent of all entries to 97 percent. Today, brokers enjoy the benefits of uniform processing of Customs transactions nationwide, forced by the disciplines of automation and electronic data interchange.

Healthy Small Business Brokerage Industry.

Most customs brokerage firms are small businesses. A recent study by Ernst & Whinney, sponsored by the National Customs Brokers and Forwarders Association of America, showed that 80 percent of customs brokers had less than 50 employees, that over half had one office and 88 percent had less than 6, that 77 percent had less than $25 million in gross billings, and that 84 percent had less than $2 million in net fees and commissions.

However, the industry appears to be very healthy. They report 25 percent earned 16 percent or more profit in 1989, another 25 percent earned between 11 and 15 percent, and another 34 percent earned between 6 and 10 percent.

In this same survey, brokers attributed profitability to three important internal factors: computerization, quality of labor, and labor cost -- in that order.

In a recent Customs survey, 75 percent of brokers surveyed reported the Customs Automated Broker Interface to be a marketing advantage, 67 percent reported productivity gains, 78 percent increased services to customers through automation, and 32 percent increased their customer base.

Voluntary Program Spurs Industry.

The Customs/Trade automation program has not only grown rapidly but has done so in an entirely voluntary environment. It did not take the industry long to see how customer service improved and inventory handling costs were reduced by using Customs automation.

Over time, the unit cost of automation has also decreased. The larger firms were the first to join, because they were already automated for personnel, payroll, accounts receivable and payable, and in many cases received data for Customs transactions electronically from their importer clients.

Only about 4.6 percent of customs brokers use mainframe computers. About one third use mini-computers, while over one-half use personal computers or PC networks. A whole software vendor and service bureau industry has developed to meet the needs of these small businesses. Forty-eight software vendors support 684 ABI clients and 11 service bureaus support 301 more. Eighteen support organizations are serving those steamship lines that are not transmitting directly to Customs.

Over half of the brokers spend less than $10,000 annually on automation. Another 32 percent spend between $10,000 and $50,000. And another 10 percent spend between $50,000 and $100,000, annually. These costs include hardware and software for both Customs-specific and normal business uses.

Electronic Data Interchange Spreading.

The principle electronic data interchange link for brokerage firms is with U.S. Customs (61 percent of Ernst & Whinney survey participants). However, 27.5 percent reported electronic data interchange links with customers, 13.7 percent with ports, 9.5 percent with carriers, and 4.6 percent with banks.

In the next ten years, EDI may grow to become the normative mode of exchanging business data -- purchase orders, invoices, shipping orders, letters of credit, along with manifest and customs entry declaration data.

EDI Must Be A Good Business Decision.

Customs approached electronic data interchange with the notion that participation in Customs automation had to be a good business decision. Adequate incentives had to be built into the system to make it worthwhile for the broker, the carrier, and their customers. The early electronic filing of entry data would have to result in faster cargo release. Accuracy of daily statement data must result in faster customer payment. Electronic payment could not adversely affect the float, but would yield savings in check-writing and handling costs. Industry told us what they needed to improve service and reduce costs. Our system was designed to be responsive.

Future Developments.

Customs Automated Commercial System is not complete. In the coming months, the filing of all types of entries via ABI will be possible, including warehouse withdrawals and foreign trade zone entries. Quota processing will be available automatically, 24 hours per day. Protest filing and drawback claims processing will be automated. The Automated Clearing House process for electronic funds transfer will be available for bills and refunds as well as payments.

We are making strides to include other government agency data collection and administrative actions in our automation plans. Already, 80 percent of the data on imports are provided to the Bureau of the Census, electronically. We are undertaking pilot programs with the Food and Drug Administration and the Fish and Wildlife Service later this year. Some 15 agencies are in our automation program for the near future. Completion of this program will make it easier for carriers, brokers, and importers to make full use of Customs automation.

A Changing Business Climate.

As previously stated, U.S. Customs involvement in automation began in 1984 with the use of a proprietary syntax -- ABI. It has and continues to serve both Customs and the trade. Customs expanded to embrace the industry standards for ocean manifest and airline manifest transmissions. However, the international business climate has changed significantly since the introduction of these message structures. Greatly increased international trade and investment under a liberalized world trading system have led to a more integrated world economy. Economic development and stability have come to depend on an uninterrupted flow of international commerce. "Just-In-Time" is becoming standard operating practice for inventory management. Off-shore sourcing is common to many domestic industries.

EDI Central To Modern Business.

EDI is central to this effort to streamline modern business. The multitude of proprietary syntaxes limits growth and promotes economic and logistical inefficiencies. Given the importance of information certainty in cargo movement, Customs made the decision to provide the trading community with an alternative medium in which to communicate Customs information.

UN/EDIFACT provides the international business and government communities with a common parlance for electronic communication. Since EDIFACT is an international standard,it permits communication not only within a multinational firm but also with other firms and government entities. A carrier preparing manifest data for a vessel calling at ports in several countries can use the same syntax for all.

U.S. Customs chose EDIFACT as its EDI standard, because it is international, transcends both trade boundaries and business sectors, and is the only standard approved by the United Nations.

Since Customs announced adoption of the EDIFACT standard, we have been championing messages through the international process. EDIFACT will permit U.S. Customs constituencies to accept a broad range of information from overseas, electronically. Manifest data, invoice data, Customs declarations, shipping information will be available immediately in EDIFACT without extensive re-keying by domestic firms. EDIFACT is being made available to those firms who want to deal with their international counterparts and other governments in an electronic environment.

I want to emphasize that EDIFACT is not intended to supplant ABI or AMS syntaxes. They will still be available for firms that view their continued use to be prudent business practice.

U.S. Customs Involvement in EDIFACT.

In March 1985, a U.S. Customs' representative was present in the United Nations in Geneva when EDIFACT was conceived - a compromise between European GTDI and North American EDI. U.S. Customs continues to be a regular participant in the semi-annual meetings of the UN Economic Commission for Europe's Working Party 4 on Facilitation of International Trade Procedures.

In February 1988, our impressions relative to the need for one global EDI standard were validated with publication of the "McKinsey Report," a Customs sponsored survey of some 75 U.S. and European firms and organizations in most major international business sectors. The Report documented that businessmen and government officials on both sides of the Atlantic were very interested in EDIFACT. Since publication of the "McKinsey Report, a report that recommended that U.S. Customs "Influence development and encourage adoption of EDIFACT", the EDI world has witnessed many significant developments.

From both a U.S. and global perspective, a major EDIFACT milestone was passed in Brussels in February of 1988, following a meeting of the Customs Cooperation Council or the CCC. The CCC, an international organization, has a membership consisting of 104 Customs Services. Following a meeting of the heads of the member states concerning the use of EDI, our former Commissioner announced U.S. Customs support for EDIFACT.

By April 1988, U.S. Customs, working with representatives of the European Commission Customs, Texas Instruments, ICI, and Philips, had developed two EDIFACT Messages - A Customs Declaration (CUSDEC) and a Customs Response Message (CUSRES).

Status of the EDIFACT CUSDEC & CUSRES Messages.

An EDIFACT message must receive "Status 1 and Status 2" approvals by the United Nations to be officially recognized as United Nations Standard Messages (UNSM). Status 1 confers upon a message the right to be pilot tested world-wide. Status 2 represents the final step in the United Nations approval process - - registration as a "standard message".

In February 1989, U.S. Customs transferred ownership of the CUSDEC and CUSRES Messages to the United Nations. Last September, the EDIFACT Customs Declaration (CUSDEC) and the Customs Response (CUSRES) messages received Status 1 approval. Status 2 is expected in March, 1991.

Customs Experience with CUSDEC & CUSRES.

During a one-year period, U.S. Customs piloted the original CUSDEC and CUSRES Messages with several companies. In August 1989, the pilot companies were ICI Americas, Inc., Philips North

America, and Texas Instruments. The prototype messages were successfully tested.

The messages changed at the time Status 1 was achieved. To afford Customs and the pilot companies the time required to re-program these changes, the test was suspended. We have now resumed testing with ICI Americas.

Customs Cooperation Council Supports CUSDEC Message.

On February 27, 1989, the Secretary General of the CCC gave a big boost to acceptance of the CUSDEC Message when, following a technical group's review of the message, he wrote:

> The group agreed that the draft CUSDEC message satisfied the needs of CCC Members worldwide.

Subsequently, in July of 1989, the CCC held its annual meeting in Washington to help us celebrate our 200th birthday, and issued a document designated the "Washington Declaration." This document endorses EDI; encourages its use by automated customs services; and declares that paper dependent customs administrations should be assisted with automation.

Commissioner Hallett Affirms Customs Support for UN/EDIFACT.

Last November, Carol Hallett became our new Commissioner. Since taking the reigns, Commissioner Hallett has held several meeting regarding UN/EDIFACT and the Washington Declaration. In January of this year, following one of these meetings, Commissioner Hallett issued a news release reaffirming U.S. Customs support for UN/EDIFACT and announcing that interface opportunities for importers and brokers would become available this fall. To demonstrate on-going support for the importance of UN/EDIFACT, the Commissioner has addressed the subject in several speeches to the trade and committed resources to assisting other customs services in automating. In addition, U.S. Customs has sponsored two free ACS/EDIFACT seminars for the trade that were attended by more than 350 individuals.

The International EDIFACT Development Arena.

As I mentioned earlier, EDIFACT was conceived in UN Working Party 4 of the Committee on Development of Trade under the UN Economic Commission for Europe. Regular participants include representatives from 29 member countries from North America, Western Europe and Eastern Europe; 11 observer countries from the UN membership roles (including Australia, Japan, New Zealand, Singapore and South Korea); and numerous international organizations.

Today, there are four Rapporteur's or experts officially recognized by the UN and each of these Rapporteurs has a support team or EDIFACT Board. The recognized Rapporteurs are from North America, Western Europe, Eastern Europe, and Australia and New Zealand. It is anticipated that a Rapporteur representing Japan will be recognized by UN Working Party 4 during its September meeting.

Our Rapporteur, is responsible for both the United States and Canada. Her support team, the North American EDIFACT Board, is made up of representatives from both countries. Should Mexico join the EDIFACT movement, our Rapporteur's responsibility would be broadened. The North American EDIFACT Board, a recognized Standing Task Group of ANSI ASC X12, is the forum for development of North American positions on international EDI message standards and related issues.

To keep up with all the standards activity taking place in the EDI arena, U.S. Customs regularly participates in the meetings of U.N. Working Party 4, the Customs Cooperation Council group dealing with EDI, the American National Standards Institutes' Accredited Standards Committee X12 and the North American EDIFACT Board.

Other Customs Services and EDIFACT.

While U.S. Customs has been busy readying itself for expanded use of UN/EDIFACT, other customs services have apparently noted (1) the February 1989 endorsement of the CUSDEC Message by the Customs Cooperation Council's Secretary General and (2) the CCC's support for UN/EDIFACT as documented in The Washington Declaration of July 1989.

With UN/EDIFACT endorsed by the Customs Cooperation Council, an international organization of 104 member countries; used by the customs services of the United States, Australia, Canada, New Zealand, Singapore and Norway; and publicly supported by the customs administrations of Austria, France, Ireland, Poland, Portugal, Sweden, Switzerland and the United Kingdom, we think the handwriting is on the wall.

The fact that only 14 of 104 countries are included in the aforementioned list should not deter anyone involved in international trade from entering the UN/EDIFACT arena. Why? Because Customs authorities in the Commission of the European Communities, representing a total of 12 countries, are expected to make UN/EDIFACT a condition of importing and exporting. In addition, the Soviet Ministry of Shipping has endorsed UN/EDIFACT; the Mexican bar code association identified as AMECOP has adopted UN/EDIFACT as their standard and has expressed interest in pursuing Mexican participation in the North American EDIFACT Board; and the customs services of Japan, Korea and

Taiwan have expressed interest in what U.S. Customs is doing with UN/EDIFACT.

Modernization Act Needed.

In recent years, Customs has made significant progress in such areas as automation, electronic processing, and paperless entry. However, this has been accomplished within an antiquated statutory framework - the rationale for which, dates back to the days of sailing ships.

Customs workload increases, both present and projected, as well as technological changes in the dynamically evolving international trade environment, require that we increase our efforts to develop innovative systems and procedures. Legislation is needed to provide a solid statutory base for all of these developmental activities.

Customs has developed a compilation of legislative proposals which are critically needed to support and promote its modernization efforts. These proposals are referred to as the Customs Modernization Act.

This Customs Modernization Act package is massive. If enacted, it will affect an estimated 50% of Tariff Act of 1930. The proposed package comprises some 45 recommended legislative changes. It addresses issues relating to automation, electronic processing, and the updating of archaic Customs laws -- some of which date to 1793.

Customs has been working for a year on the development of this comprehensive legislative package. The proposals have been extensively reviewed and approved within Customs, and the Treasury Department.

The Department forwarded the package to the Office of Management and Budget on June 1, 1990. OMB and interagency review is being expedited, with the possibility that the package could be transmitted to the Congress this month.

The package provides the legal authority for the electronic transmission by both Customs and the trade of various types of trade and customs information and notifications.

Our legislative package provides further statutory support for the policies and practices by which Customs has authorized and accepted the electronic equivalent of a signature for data transmitted through a Customs authorized electronic data interchange, such as the Automated Broker Interface. Also, in efforts to work with the trade community to effect more efficient processing, Customs has traditionally invoked a liberal policy in accepting facsimiles of signatures. This legislation reinforces and builds on those practices.

The proposed bill provides for the acceptance of electronic filing and certification (electronic signature) for the filing of entries, entry summaries, protests, manifests, vessel entry and clearance, surety information, bonds, and other data traditionally requiring hard copy documentation and authentication. (Proposed regulations published in the Federal Register on January 25, 1990, also make such electronic (facsimile) signatures a requirement for "certification" of transmitted data.)

The proposed bill also gives Customs the authority to provide an efficient and legally sufficient electronic notification to importers and others regarding such items as the liquidation and suspension of entries, and the notification of the release of merchandise.

Some of the provisions are needed to enhance the effectiveness of our regulatory responsibility, while permitting us to expand electronic and paperless processing. They are particularly needed in an environment where we are placing increased reliance on electronic submissions from importers, brokers, and others - using this information as a base on which to approve paperless and selectivity processing. We are currently working with other agencies to ensure the paperless process will not interfere with the effective administration of our statutory import programs.

Customs has undertaken an extensive outreach program with the trade. Customs is committed to maintaining an open dialogue with the trade throughout the development and legislative process. A public information package describing the legislative proposals has been developed for distribution to all interested parties. A copy is being provided to this Committee. It is available to all, on request to Customs.

In today's environment, merchandise and information move much faster than envisioned almost 200 years ago. We believe our legislative proposal provides the statutory framework for the environment today and in the 21st century.

Information Dissemination to the Trade.

Customs uses several approaches to keep the trade informed about the progress of Customs automation. In cooperation with the trade, seminars are conducted at various locations around the country, some focusing on automation, some specifically on EDI and EDIFACT, and others on general trade topics. These forums are opportunities not only for the trade to learn about Customs and international automation, but for Customs to learn from these international trading firms about their automation needs and strategies.

In addition, Customs publishes numerous documents such as the requirements for its various interfaces, marketing documents on new features and plans, such as our Automated Clearing House program, and our most recent checklist of all electronic transactions available to the trade called "Yes You Can....on ACS".

Of course, all significant changes and improvements to the system require notification of the public through the Federal Register, a comment period, and publication of a final rule making. So far, our marketing approach has been very successful in reaching our various trade constituencies.

YES YOU CAN ... on ABI ... NOW

File Entry Summary data electronically with benefit of ACS/Census edit results – for accuracy and uniformity.

Get ACS/Census edit results – for accuracy and completeness in system development and testing of Entry Summary transactions.

Choose edit results:

- ➡ Acknowledgments for all transactions
- ➡ Acknowledgments for error/warning only

Certify Entry Summary for cargo release processing (separate 3461 transaction not required).

File Entry release data electronically for cargo release processing with benefit of ACS edits and validations for greater accuracy.

File Entry data electronically up to 60 days before estimated date of arrival – and change details up to time of cargo release processing.

Receive results of ACS edits and validations for accuracy during Entry system development and testing.

Receive priority handling through exam/release processing (including Quota and One-Stop-Quota).

Select Cargo Release certification options:

- ➡ By separate transmission
- ➡ In same transmission as Entry transmission

Receive conditional Cargo Release results up to five days before conveyance arrives (same day for air transport).

YES YOU CAN ... on ABI ... NOW

Receive daily statement of multiple Entry Summary transactions and amounts scheduled for payment that day.

Update scheduled daily statement with additions, deletions, or re-schedule Entry Summaries for payment, up to the day before the statement date.

Choose one of two types of daily statements:
- ➡ Broker statement
- ➡ Importer statement

Choose sorting of items within each statement type:
- ➡ Sort by Entry Number
- ➡ Sort by Broker Reference Number

Select payment method:
- ➡ One check for each Entry Summary
- ➡ Check(s) for Summaries on a daily statement
- ➡ Automated Clearinghouse electronic funds transfer via ABI statement

Extract Customs reference files:
- ➡ Region/District/Port Code file
- ➡ Foreign Country (ISO) Code file
- ➡ General System of Preferences (GSP) Code file
- ➡ Foreign Port Code file (Census Schedule K)
- ➡ State Code and Zip Code file
- ➡ Gold Price file
- ➡ Carrier Code file
- ➡ Foreign currency exchange rates (October 1987 to present date at 4 p.m. Eastern Standard Time)
- ➡ Foreign currency conversion file
- ➡ F.I.R.M.S. Code file
- ➡ Error/Warning statistics by filer, district, port and application
- ➡ Harmonized Tariff Schedule (for ranges)

YES YOU CAN ... on ABI ... NOW

Receive Harmonized Tariff System database with ACS edits on magnetic tape – FREE.

Receive Harmonized System tariff updates electronically.

Receive liquidation/suspension/extension information automatically.

Receive NILS – all liquidation information for an importer, regardless of ports of entry (importer authorization is required).

Add to importer-of-record number file electronically (no CF 5106 required).

Query for:

- ➡ Entry status, collections, billings, refunds
- ➡ Quota information
- ➡ Tariff information
- ➡ Importer/bond data
- ➡ ADD/CVD case data
- ➡ Manufacturer/supplier I.D. code
- ➡ F.I.R.M.S. code

Receive all or limited job-run detail returned on the printout.

Select retrieval options:

- ➡ All transaction results
- ➡ Liquidations, only (all methods of filing)
- ➡ All transaction results, but liquidations

Retrieve filer reference number, if sent.

Receive results of Line Release processing.

Receive daily foreign currency exchange rates automatically.

YES YOU CAN ... on ABI ... NOW

Receive daily quota information, including quota critical list, via administrative message.

Provide consolidated Entry Summary (one Entry Summary for multiple release transactions).

Update manufacturer/supplier file (send name and address, receive I.D. code).

Receive Paperless designation for general exam Entry transactions.

Transmit via ABI:

- ➡ U.N. Customs Declaration (Invoice & Summary in one message), in EDIFACT syntax
- ➡ Summary data in Customs syntax
- ➡ Invoice data in Customs syntax

Get advance information on system changes and enhancements via administrative message.

Get system operations status information via administrative message.

Select transactions for priority processing.

Receive/send electronic mail (e-MAIL) between ABI participants and certain District/Region/Headquarters Customs personnel including Client Representatives.

Update Entry Date electronically.

YES YOU CAN ... on ABI ... SOON

File selected "bypass" Entry Summaries electronically, without providing additional paper documentation.

Receive notice that referenced bill-of-lading or air waybill is not on file to speed reconciliation and discrepancy resolution.

Change selected shipping details on Entries in Customs status, up until time of cargo arrival.

Receive automated quota processing – 24 hours per day – and results electronically.

Query Visa Requirements (Tariff/Country, Category/Country or Country subject to visa).

Select data retrieval by transaction type.

File Protests electronically via ABI.

Query Protests electronically.

Use ACH via ABI process for bills.

File continuous bonds electronically.

File TIB Entries, FTZ Entries, & Warehouse Withdrawals for consumption via ABI.

Receive 26 cargo status messages passed from Manifest Modules via ABI.

YES
YOU
CAN ... on ABI ... SOON

Comply with other Government Agency requirements via ABI:
- ➡ Identify transactions subject to other agency review
- ➡ Access other agency reference files
- ➡ File other agency data electronically via ABI
- ➡ Receive edit and validation messages for other agency transactions
- ➡ Communicate with other agencies more effectively
- ➡ Receive notification of other agency cargo status
- ➡ Receive authorizations for cargo disposition via ABI for other government agencies
- ➡ Get faster cargo release for other agency merchandise

Client Representative Information

☎ (202) 566-5492

Headquarters Washington, D.C. & Field Sites:

Boston ◆ New York ◆ JFK Airport ◆ Philadelphia ◆ Chicago
Newark ◆ Charlotte ◆ Houston ◆ Dallas ◆ New Orleans ◆ Seattle
LAX Airport ◆ Los Angeles ◆ San Francisco ◆ Miami ◆ Cleveland

Use the Help Desk - 24 Hours Everyday!

☎ (703) 440-6000

- ➡ Communications information
- ➡ Computer status information
- ➡ Job scheduling information

YES YOU CAN ... *with Line Release* ... NOW

Participate in an automated release system without expensive computer or printer equipment.

Receive pre-approval for expedited release after one-time application.

Obtain release of your shipments through Customs processing only . . . Customs does the work for you.

Obtain release without preparing a CF 3461 or CF 3461 ALT, use a bar code label instead . . . only pennies per label.

Release merchandise without Selectivity processing . . . Line Release processing takes less than one minute.

Obtain release of shipments directly at the primary booth on the border . . . no need for secondary processing . . . the driver never leaves the truck.

Receive detailed report of all Line Release transactions electronically through ABI.

Minimize your keying and processing . . . let Customs output report to you create your entry summary records.

Participate in electronic entry summary through Line Release.

YES YOU CAN ... *with Line Release...* SOON

Obtain release of shipments at airports and seaports.

Capture Bill of Lading information and transmit data to carrier.

Create in-bond movements of cargo.

YES YOU CAN ... on AMS Ocean ... NOW

File inward manifest data electronically using:
- Customs syntax (CAMIR)
- TDCC Ocean Manifest syntax – ANSI X.12 Committee

Participate in Paperless Master In-Bond Program (no CF 7512 document required).

Receive results of AMS edits and validations to assure accuracy and completeness.

Amend bill-of-lading data electronically.

Designate the AMS service center/terminal to receive carrier status notifications.

Receive authorization for master in-bond movements.

"Arrive" paperless master in-bond at the in-bond port of destination by:
- Container number
- Bill-of-Lading number
- In-Bond control number

Receive cargo status information up to five days in advance of vessel arrival (if Manifest is on file) to facilitate inland transport planning.

Receive notification when an Entry has been filed that references a bill-of-lading not on file (shell record).

Receive notification when an Entry has been cancelled or deleted.

Receive notification that a merchandise exam is required and when it has been completed.

YES YOU CAN ... on AMS Ocean ... NOW

Receive authorization for within-port transfers (Permit to Transfer) electronically.

Receive notification of APHIS and other government agency holds and releases via interface with AMS.

Receive notification 48 hours before cargo is ordered to General Order Warehouse.

Request extension of the layorder period via AMS.

Receive notification prior to AMS archiving of bills-of-lading.

AMS Port Authorities may:

- File manifest data for multiple carriers calling at multiple ports.
- Receive manifest data on AMS carrier cargo discharged at your port, via computer download (under Freedom of Information Act).
- Receive data on master in-bond cargo destined for your port, via computer download.
- Receive cargo release information for AMS carriers calling at your port.
- Receive cargo release information for non-automated carriers calling at your port (importer authorization required).

AMS Service Centers may:

- File manifest data for multiple carriers calling at multiple ports.
- Receive cargo status notifications for AMS carriers (carrier authorization required).

YES YOU CAN ... on AMS Ocean ... SOON

"Arrive" the vessel at each port of call (an AMS Carrier transaction).

Use unique bill-of-lading number for Master In-bond control.

Use Harmonized Tariff number in AMS.

Interface with other government agencies via AMS.

Receive other government agency cargo disposition messages via AMS.

Transmit house and sub-house bill-of-lading data.

Interact with container freight stations (CFS's) and non-vessel operating common carriers (NVOCC's) via AMS.

Generate and transmit batch numbers with manifest data to enhance tracking ability.

Communicate with selected Customs field and headquarters personnel via electronic mail (e-MAIL).

Benefit from additional crosswalks between AMS Ocean bill-of-lading and entry activity in ABI for improved facilitation of cargo movement.

Use ACS Client Representatives for AMS procedures information and operations problem-solving in the following locations:

Customs Headquarters, Washington, D.C. and field sites:
Boston ♦ New York ♦ JFK Airport ♦ Philadelphia ♦ Chicago
Newark ♦ Charlotte ♦ Houston ♦ Dallas ♦ New Orleans ♦ Seattle
LAX Airport ♦ Los Angeles ♦ San Francisco ♦ Miami ♦ Cleveland

☎ (202) 566-6012

YES YOU CAN ... on AMS Air ... NOW

File air waybills electronically.

Amend air waybills electronically.

Receive results of AMS edits and validations for accurate and complete data.

Communicate a flight departure electronically.

File Permit to Proceed, In-bond, and Local Transfers electronically (may be transmitted in the original bill).

"Arrive" an In-Bond shipment at the port of destination electronically.

Use the air waybill number as the in-bond control number.

Designate a freight forwarder or deconsolidator to act as an agent for the carrier.

Receive cargo status notifications as soon as Customs is notified that the flight has departed from the last foreign port to assist in staging, including:

- ➡ General examination status
- ➡ Hold cargo for government agency action
- ➡ Examination required
- ➡ Examination completed

Receive notification when an Entry has been cancelled or deleted.

Receive notification 48 hours prior to the expiration of the layorder period.

YES YOU CAN ... on AMS Air ... NOW

Request extension of layorder period via AMS.

Receive notification at the expiration of the layorder period and orders to send cargo to a General Order Warehouse.

Freight Forwarders and Deconsolidators can:

- File air waybill information electronically for non-automated air carriers.
- Update existing air manifest data, once designated as an agent by the carrier.
- Receive all cargo status notifications for the non-automated carriers they service.

YES YOU CAN ... on AMS Air ... SOON

Receive notification when air entry has been filed that references an air waybill number not on file.

Air Couriers will be able to:

- ➡ File and Amend air waybills electronically.
- ➡ Receive results of AMS edit and verification routines for greater accuracy and completeness.
- ➡ Communicate a flight departure electronically.
- ➡ Receive all cargo status and disposition notifications as soon as Customs is notified of the flight departure from the last foreign port, to assist in cargo staging.
- ➡ File Permit to Proceed, In-Bond, and Local Transfers electronically (may be transmitted in the original bill).
- ➡ Use the air waybill number for In-Bond control.
- ➡ Interact with Customs on layorder periods, extensions, and General Order disposition of cargo electronically.
- ➡ Receive notification when an entry has been filed that references an air waybill not on file (shell record).

TESTIMONY OF

MR. RICHARD DONNELLY,
ACTING DEPUTY ASSISTANT SECRETARY OF PRODUCTION RESOURCES

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
FOR PRODUCTION AND LOGISTICS

U.S. DEPARTMENT OF DEFENSE

BEFORE THE

SUBCOMMITTEE ON EXPORTS, TAX POLICY AND SPECIAL PROBLEMS
AND THE
SUBCOMMITTEE ON ENVIRONMENT AND LABOR
OF THE
SMALL BUSINESS COMMITTEE

U.S. HOUSE OF REPRESENTATIVES

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DIRECTORATE FOR FREEDOM OF INFORMATION
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DEPARTMENT OF DEFENSE

JUNE 18, 1990

OASD(PA) DFOISR 90-T-1258

INTRODUCTION

Mr. Chairman and members of the subcommittees, thank you for inviting me to today's hearing on the special problems facing small businesses in adapting to modernization and the age of computer-to-computer exchange of information among trading partners.

The Department of Defense recognizes that advanced computer technology and telecommunications capabilities can greatly reduce the costs associated with the acquisition and support of weapon systems. The transition from paper to the digital exchange of data has already begun, not only in defense but also in commercial segments of our economy. Therefore, the Department is ensuring its plans for this transition are closely aligned with the broad trends and standards that are emerging throughout the private sector.

To be competitive in the 1990's U.S. companies must reduce the "time to market" for new products, and must institute business and manufacturing systems that respond rapidly to customer needs. Many forward looking companies are already starting to capitalize on U.S. strengths in automation and integration. They are using information technology to support (1) electronic links with suppliers and customers, (2) integration of engineering functions, and (3) automated manufacturing and the paperless factory. Recent reports show the payoffs are substantial: reductions in "time to market" of 40% or more, commensurate reductions in product cost, and a simultaneous improvement in product quality.

American small businesses have a critical role to play in this transition from paper to computers. The Department of Defense, working with industry, has several efforts underway to ensure that small businesses are an integral part of this transition.

The Department of Defense has organized its efforts in this area into two major, complementary initiatives, Electronic Data Interchange (EDI) and Computer-aided Acquisition and Logistic Support (CALS). EDI focuses on the automation of business transactions and CALS concentrates on the automation of technical data. Both initiatives enable significant process improvements.

BUSINESS DATA INTERCHANGE: THE EDI INITIATIVE

The Industry Trend

Electronic data interchange (EDI) is the computer-to-computer exchange of routine business transactions, such as purchase orders, invoices, and shipping notices. EDI is not a new phenomenon. Large private companies and DOD have been electronically communicating business information since the 1950s. However, this data was exchanged in nonstandard and proprietary formats. Because each user communicated in a unique format, businesses found it cumbersome, time consuming and expensive to expand their electronic communication capabilities to new trading partners. What emerged from this situation were efforts to create national and international standards that would serve to broaden and ease the interchange of data.

Two groups led the development of these standards for North America. The Transportation Coordinating Committee (TDCC) formed in the late 1960s created transportation industry oriented standards. In 1979, the American National Standards Institute (ANSI) formed the X12 committee to develop standards that cut across industry boundaries. This committee now manages the development of uniform standards for electronically interchanging business transactions within and among industries. DOD has been an active participant in such industry committees, and is committed to the use of industry standards for EDI. These standards eliminate the need to create special software to receive or send user-unique data formats. Any software designed to generate and interpret standard formats can be used to exchange information with all trading partners.

Industry has found that the automation and interchange of business data through the use of standards has enabled numerous improvements in the way they conduct business. For example, EDI, by providing for rapid order placement and real-time status information, has enabled the implementation of just-in-time inventory and distribution concepts.

DOD's EDI Program

The potential for EDI applications in the Department of Defense is enormous. Our business transactions with industry stem from approximately 15 million contract actions made on an annual basis, approximately 98% of which are for procurements of under $25,000. The role of small business in DOD's implementation of EDI is critical given that 70% of these purchase actions involve small business firms. Recognizing the potential benefits to be derived to the Department and its contractors, DOD is committed to a gradual but steady transition to EDI.

In May of 1988, the Deputy Secretary of Defense directed that all DOD components should make maximum use of electronic data interchange (EDI) for the paperless processing of all business-related transactions. The Assistant Secretary of Defense for Production and Logistics (ASD (P&L)) has responsibility for establishing program guidance and a timely transition to the ANSI X12 standards and acceptance of EDI as the normal way of doing business with DOD. A DOD users group is now working with an industry advisory group to develop a DOD document which provides implementation guidelines for EDI to assist DOD and industry.

DOD has obtained the support of the Private Sector Council, a non-profit organization supported by industry, which will assist DOD in the development of a strategy for involving small businesses in the EDI program. The Private Sector Council also has plans to hold conferences on EDI in several major cities beginning this summer.

DOD is committed to building a unified interface with industry for EDI. In May of 1990, the Defense Logistics Agency was designated to act as DOD's Executive Agent for implementing and maintaining Defense-wide programs for EDI.

EDI Standards

The ANSI X12 standards include a wide range of EDI transactions for the exchange of business data. They include: invoice; payment order/remittance advice; planning schedule with release capability; Request for Quote (RFQ); RFQ response; inventory advice; purchase order (PO); ship notice/manifest; PO change; receiving advice; shipping schedule; PO change acknowledgement; order status inquiry; order status report; and functional acknowledgement.

New ANSI X12 standards are developed through the ANSI Accredited Standards Committee (ASC). They are circulated in draft form to gain industry experience before solidifying them as ANSI X12 standards. One initiative currently underway among major defense contractors and the ASC X12 Government Subcommittee is to create transaction sets for contract cost and schedule reports passed between DOD program offices, prime contractors and subcontractors.

Implementation Approach

DOD is taking a common approach to implementation and is committed to presenting a single face to industry. We will employ intelligent gateway technology developed by Livermore Laboratories which will allow us to deal effectively with a wide range of systems and networks so that both DOD activities and vendors can choose their own systems and means of communication.

Benefits of EDI

The benefits of EDI include more accurate records, lower data entry costs, elimination of mailing costs, decreased paper handling, greater customer satisfaction, reduced inventory, better cash management, reduced order time, and more accurate information for decision support. EDI provides for uniform communications with all trading partners.

The application of EDI also enables DOD to take advantage of innovations in the way business is conducted. Examples of such innovation include: the implementation of just-in-time inventory practices; paperless procurement; more effective use of the industrial base; and improvements in payments to vendors.

Selected Examples

Department of Defense Components have begun EDI in a variety of applications. In the sections that follow brief descriptions of selected examples are provided.

Paperless Ordering Placement System (POPS) -- The Defense General Supply Center utilizes an EDI system called the Paperless Ordering Placement System (POPS). This system was initially used to acquire supply items with storage/handling problems and/or limited shelf life, but is now used to acquire many other items that can be supplied directly from a contractor's distribution channels. This eliminates the need for wholesale stocks in DOD warehouses. POPS contracts are typically competitively awarded, indefinite-delivery contracts with major suppliers.

Electronically Assisted Solicitation Exchange (EASE) -- The Naval Supply Center in Jacksonville, Florida has utilized EDI to change the structure of the preaward process, by providing solicitations through an electronic bulletin board. The Electronically Assisted Solicitation Exchange (EASE) project has eliminated the practice of rotating Request for Quotes (RFQs) among suppliers and obtaining just three quotations. When the RFQ is posted on the electronic bulletin board, it may generate more than three quotations, which serves to increase small business opportunities, stimulate competition and reduce prices. Based on the success of the EASE project in Jacksonville which included the participation of approximately 150 contractors, the Navy has plans to implement EASE at other sites.

SAMMS Procurement by Electronic Data Exchange (SPEDE) -- The Defense Logistics Agency has applied EDI technology to their Standard Automated Material Management System (SAMMS) to permit their supply centers to issue orders under a Blanket Purchase Agreement and receive vendor responses electronically. The vendors who participate have installed Government-furnished SPEDE software on personal computers, and have agreed to certain telecommunications procedures.

SPEDE-Medical, used by the Defense Personnel Support Center's medical supplies procurement activity, provides a small purchase RFQ/quotation/order system involving approximately 40 small business medical supply distributors. This system has fully complied with ANSI X12 standards. The use of this system has led to increased efficiencies in the procurement function while stimulating competition, lowering prices and providing automated order/quotation tools to small businesses.

Electronic Funds Transfer (EFT) for Vendor Payments -- The Department of Defense also has several pilot projects using electronic funds transfer for vendor payments. For example, the Defense Logistics Agency has Defense Contract Administration Service Region vendor payments pilot projects in place at eight locations and supply center payment pilot projects at five sites. The benefits of EFT include: improved cash management and Prompt Pay compliance, lower costs of goods and services through renegotiated payment terms and the elimination of lost or stolen checks.

TECHNICAL DATA INTERCHANGE: THE CALS INITIATIVE

The Industry Trend

The paper flow between industry and DOD today includes, in addition to business data transactions, massive volumes of technical data. Millions of engineering drawings, and millions of pages of technical manuals and reports are delivered each year. Companies that work together to manufacture an end item are also continuously exchanging technical data. The introduction of computer-aided engineering, computer-aided manufacturing and automated publishing has enabled many companies to automate various forms of technical data. A major weapons program can include several thousand companies during development and life cycle support, with interchange of technical data across thousands of interfaces. The challenge becomes the exchange of technical data among trading partners with dissimilar computer systems. DOD's CALS program is responding to this challenge with a strong emphasis on interface standards.

DOD's CALS Program

The Department of Defense formally established CALS in 1985 as a DOD and industry strategy to transition from paper-intensive weapon system design, manufacture, and support processes to a highly automated and integrated mode of operation. CALS focuses on the generation, access, management, maintenance, distribution, and use of technical data associated with weapon systems such as engineering drawings, product definition and logistic support analysis data.

CALS is changing the way DOD does business by integrating contractor data systems and processes, providing specified government access to contractor data bases, and implementing digital interchange of technical information using international and national standards. In conjunction with EDI, CALS is providing a digital interchange environment for DOD and industry. Initial CALS projects have shown that this environment will result in a more productive, competitive industrial base; more available, reliable, cost effective weapon systems; and more efficient life cycle support of those weapons.

In 1988, the Deputy Secretary of Defense directed that steps be taken toward the routine contractual implementation of CALS in all new weapon system acquisitions. Additionally, ongoing acquisition programs are being reviewed for CALS retrofit opportunities.

The transition from paper-document transfer to a highly automated and integrated mode of operation will progress along an evolutionary path. In the near term, through the mid 1990s, paper document transfer will be replaced by digital file exchanges. In the longer term, the mid-1990s and beyond, advanced engineering and manufacturing technologies, integrated product databases and distributed data base technologies will be developed so that all the information needed for design, manufacture and support will be accessible to authorized industry and DOD users.

CALS Partnership With Industry

The success of CALS is based upon a strong partnership and a continual dialogue between DOD and industry. A CALS Industry Steering Group was formed in 1986 to coordinate industry and DOD CALS activities. This group is a coalition of industrial associations and professional societies spanning a wide spectrum of defense and commercial industry interests. It is currently supported by 18 industry associations and nearly 700 active participants. Working groups are addressing acquisition, information technology, concurrent engineering, logistic processes, education, small business and international concerns.

The CALS Small Business Task Group (SBTG) was established in 1989 to help the small business community to understand their options and the business implications of CALS implementation. The efforts of this group have included the preparation and distribution of a CALS brochure specifically tailored to small businesses, and several outreach programs. For example, recent outreach efforts included a CALS small business workshop that was held at Marshall University in West Virginia this past April and a CALS Supplier Workshop held by the General Motors Allison Division in Indianapolis during May. Additional outreach efforts are planned throughout the country for this coming year. DOD is committed to supporting these outreach efforts with updated CALS information and DOD speakers.

CALS Standards

Standards are essential for the interchange and access to digital information among dissimilar computer systems. DOD CALS standards are application subsets of existing and emerging international and national standards. DOD MIL-STD-1840A, "Automated Interchange of Technical Information," is the parent document for a family of military specifications through which CALS standards will be published.

Through an interagency agreement, the National Institute of Standards and Technology (NIST) of the Department of Commerce supports DOD in the development of CALS standards. NIST coordinates the development of standards and conformance tests. They are also facilitating industry development efforts and providing the national testbed required for the advanced product definition standards needed by CALS.

Technical Data Interchange Options

Several options exist for contractors when considering the interchange of technical data. One option is the development and transmission of data to a customer in a CALS standard format. Vendor hardware and software products supporting CALS are now becoming available in all price ranges. Another option to deliver data to a customer in paper form or in a nonstandard digital format for the customer to convert to his specific use. A third option is to employ a data conversion service to standardize and exchange technical data. Given the various types of technical data that can be interchanged and the number of trading partners, companies (including small businesses) can implement CALS through a variety of flexible arrangements with their customers.

Benefits of CALS

CALS will reduce lead times, improve quality and reduce costs. According to a study by the CALS Industry Steering Group, engineering activities have achieved 50% time savings in developing new designs and time reductions of 30% to 50% in engineering changes. Acquisition activities have experienced a 98% reduction in data transfer errors, a 40% savings in search and retrieval times and a 30% reduction in overall acquisition process time. Manufacturing activities have reported an 80% improvement in quality, over 30% inventory savings and a reduction of quality assurance process time of 85%. In terms of life cycle support activities, reported benefits have included a 30% reduction in the cycle time for technical document changes and a 70% savings in training planning.

Selected Examples

In the sections that follow, brief descriptions of selected CALS applications are provided.

Rapid Acquisition of Manufactured Parts (RAMP) Program -- The Navy's Rapid Acquisition of Manufactured Parts (RAMP) Program will enhance logistics support by applying automated manufacturing, acquisition and inventory management technologies to acquire small lots of selected, hard-to acquire parts and assemblies at reduced cost and significantly shortened lead times. A RAMP prototype facility in Charleston, S.C. is demonstrating that digital product data in a CALS standard form can be used to drive an automated manufacturing cell.

RAMP technology can produce a part with a substantial reduction in manufacturing lead time (weeks instead of months), at a lower cost than conventional manufacturing, and with first time quality in lot sizes as small as one. The implication for DOD is that certain spare parts can be made on demand, rather than held in inventory with significant savings. The implication for small manufacturers is that in the mid-1990's conventional machine shops will have to face competitors who can accept digital product data from customers and produce parts faster, cheaper and with better quality. Therefore, the transfer of RAMP technology to small U.S. manufacturers is a major objective of the Navy's program.

The RAMP Research Associate Program includes over 200 companies who participate in technology transfer programs. In addition, to investigate the special needs of small manufacturers, the Navy, DLA and FEMA have solicited interested manufacturers to participate in a RAMP Small Business Case Study. This case study program will extend through 1991.

Weapon System Pilot Programs -- CALS weapon system pilot programs designated in 1986 included the A-12, ATF, LHX and the SSN-21 submarine. These programs, and dozens more since 1986 have begun applying CALS. They have integrated contractor islands of automation so that data are created once; provided government program offices with terminals to access contractor data; and have demonstrated digital delivery of data using CALS standards. CALS is now being implemented in over 50 weapon system programs.

Concurrent Engineering (CE) -- CALS serves to facilitate the process of concurrent engineering, which uses a multi-function design team to accomplish simultaneous design of products and their related processes, including manufacture and support. By integrating product engineering activities with shared databases, CALS and CE will lead to increased product quality and reduced costs and development times. Cost reductions of 30% and reductions in development time of 40% to 60% have been reported through the application of CALS and CE.

Small Business Innovation Research Program -- A recent Request for Proposal under the Small Business Innovation Research Program for the Department of Defense identified approximately 20 projects that involved CALS technologies and applications. For example, one project, entitled, "Intelligent Document Retrieval" involves the development of advanced computer system technology for rapid location, extracting and assembly of text into meaningful information structures. Another project, "Intergraph Modeling Libraries" seeks to develop standardized model libraries of commonly used components and drawing symbols to be used Army computer aided design systems. A third example, "Low Cost Portable Computer Generation Image Machines" is to explore novel approaches for rendering images in low cost portable equipment. Proposals from small businesses are expected in July 1990.

THE TRANSITION AS IT AFFECTS SMALL BUSINESSES

Both EDI and CALS will have a significant impact on the way small businesses conduct their operations. Market forces will lead to more and more industrial networking and a consequent, increasing requirement for the digital exchange of both business and technical information. Small businesses will need digital links with their suppliers and customers, just as they need telephones and fax machines today.

This application of information technology will be accompanied by a cultural change in the way businesses (large and small) conduct their operations and how they communicate with other organizations.

The Importance of an Evolutionary Transition

DOD's strategy for the transition from the paper to digital exchange of both business and technical data is guided by three major principles.

First and foremost, DOD is committed to working closely with industry to ensure that the DOD implementation of EDI and CALS will work in parallel with overall industry efforts. A continuing dialogue with industry is helping DOD recognize and address issues that may impede a successful implementation. This is being done numerous ways throughout the CALS Industry Steering Group with DOD support and through DOD's involvement with the various working groups of the American National Standards Institute. In particular, DOD continues to work closely with small businesses to identify and address issues unique to small business applications. A good working relationship with industry provides for a better understanding of what is feasible and what is not given operating constraints of businesses that DOD may not otherwise understand. The evolutionary transition also permits small businesses to take the time necessary to assess various CALS options before deciding what is appropriate for their particular situation.

The second principle guiding DOD's transition strategy is a commitment to use national and international standards. The role of standards is critical to small businesses. Without standards, large customers would tend to impose unique, proprietary data formats which could potentially severely restrict the number and type of markets small businesses could afford to participate in. DOD's commitment to national and international standards for EDI and CALS helps ensure that opportunities remain open for small businesses.

Gradual phasing, with extensive use of pilot projects and demonstrations is the third principle guiding DOD's transition strategy for EDI and CALS. In many cases, the changes necessitated by digital interchange are difficult to anticipate. Through the DOD pilot projects, mentioned previously, the technical standards are put to a real world test and the business application issues become more readily apparent. In instances where the tests and demonstrations involve both large businesses and small businesses, factors unique to business size can be controlled and the impact of such factors examined. DLA has planned such tests to investigate small business issues later this year in the CALS Test Network. The results will become the basis for general guidelines in CALS application to small businesses.

Outreach Activities: An Essential Ingredient

The first step that can be taken to help facilitate the introduction of EDI and CALS to small businesses is to make small businesses aware of the concepts, the potential benefits, and how EDI and CALS may provide new business opportunities for them.

Various mechanisms can serve to increase the awareness level of small businesses about EDI and CALS. One such mechanism is the CALS electronic bulletin board that the National Institute of Standards and Technology operates for DOD. Through it, users can identify key points of contact and upcoming meetings, and can download selected documents in a variety of formats. Other channels for reaching small businesses include the existing DOD network of approximately 700 small and disadvantaged business offices that have been established at DOD installations and the small business development centers located at universities and colleges throughout the country. These offices and centers can disseminate informational brochures on EDI and CALS that are specifically tailored to small businesses.

Several industry-sponsored workshops have been held throughout the country to promote the benefits of EDI and CALS to small businesses. DOD has worked and continues to work to support these efforts. In addition, DOD has participated in the large CALS Expo Conference sponsored by the National Security Industrial Association each of the past three years. Attendance at the 1989 Expo exceeded 1800 including many small business attendees.

The Department is also exploring alternative approaches for participation with state, local or private sector outreach centers. For example, DOD is providing information and speakers to support an industry-funded CALS center in Dallas, Texas which provides educational courses and conducts applied research projects to aid member companies in implementing CALS.

The rapidly evolving pace of EDI and CALS requires that information be disseminated continually. DOD is sensitive to the needs of small businesses for current information. DOD is examining the need for an Information Analysis Center to serve as a national information clearinghouse and technical assistance hotline for DOD's EDI and CALS programs. This function is currently provided on an ad-hoc basis by NIST, but growing industry and government interest may require a formalized contractor-operated center. Evaluation of needs and alternatives will be completed by September 1990.

Data Protection and Security

The exchange of business and technical data both involve the issue of data protection and security. In addition to protecting classified data, DOD has a responsibility to protect proprietary data.

DOD is assessing various means of resolving the real and perceived threats associated with the exchange of digital data. The National Institute of Standards and Technology is conducting a Risk Assessment study of the CALS and EDI environment. The Department of Defense has established the Protection of Logistics Unclassified/Sensitive Systems (PLUS) Program to protect CALS and EDI data. With support from the Lawrence Livermore National Laboratories, DOD is prototyping low cost means of protection of external and internal communications; protection of digital data storage; authentication of users and data; and nonrepudiation of transactions.

Summary

The Department of Defense is committed to ensuring the effective transition of small businesses into the era of the digital interchange of business and technical data. While DOD is sensitive to the concerns that small businesses may have about this transition, we believe that the transition itself is inevitable. We will continue our concerted efforts with industry to address technical and business issues and create an environment in which small businesses can vigorously pursue additional opportunities afforded by EDI and CALS.

TESTIMONY OF

LARRY E. KITTELBERGER
DIRECTOR, CORPORATE COMPUTER SERVICES
NEWPORT NEWS SHIPBUILDING

Congressional Hearing
Regarding
Electronic Data Interchange (EDI)

U.S. House of Representatives
Committee on Small Business
Subcommittee on Exports, Tax Policy, and Special Problems
Subcommittee on Environment and Labor

June 18, 1990

CONGRESSIONAL HEARING
REGARDING
ELECTRONIC DATA INTERCHANGE (EDI)

REPORT OUTLINE

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I. INTRODUCTION

The fundamental question about Electronic Data Interchange (EDI) is not if it will happen, but when and how. Virtually every aspect of daily life is affected in some way by the exchange of electronic information that is generated, managed and moved by computers. In fact, the proliferation of devices like fax machines and the growing amount of digital telecommunications make telephones capable of being the send-receive devices that enable and, in fact, create electronic data interchange. The fact is that EDI is already happening and the rate of change is increasing rapidly. The ability to accept this change, manage its influence, and harness and exploit emerging capabilities will make the difference between those companies who are beneficiaries and those who are victims.

There are almost as many definitions of EDI as there are points of view on EDI. One such point of view describes EDI as intercompany computer-to-computer transfer of information and documentation. This electronic exchange of business data between organizations necessitates that data be formatted in a method that can be understood and interpreted by the accepting system. Although support is increasing in the United States for the American National Standard Institute's (ANSI) X.12 and Edifact is gaining acceptance in Europe, there presently isn't a standard that has emerged for all sectors of industry. Data transfer takes place in various forms throughout industry using mutually agreed upon formats. The majority of these exchanges do not necessarily involve direct communication links between the participants. The methods used to exchange electronic data range from the transfer of magnetic media (computer tape and diskette), to the transfer of information (transactions) from an initiators computer system directly linked to another computer system. Electronic Data Interchange also occurs in many forms, including:

•	Text:	Both processible and non-processible data. Processible data is structured text such as drawing indexes, Bills of Material (BOM), and material catalogs. Processible data does not include graphics. Non-processible data is usually generated from a word processor.
•	Geometry:	2-dimensional and 3-dimensional mathematical design data including text such as sectional construction drawings.
•	Product Model data:	3-dimensional computer model (either wire frame or solid) of the entire ship. This includes geometry and attribute information such as specification, material type, and weight location functions.

These data forms apply to applications that range from fairly simple word processing text, to complex design product data which directly drives or controls manufacturing machines.

At Newport News Shipbuilding, a strategic business decision has been made to participate in this information revolution and in fact contribute to and influence the nature and outcomes associated with the enabling technology and standards. The experiences of NNS during the past few years show the feasibility of moving in a rapid and controlled manner into a wider use of information technology. This experience has shown that acceptance and use of technology can be accomplished in phased increments. This approach can allow significant change to be implemented yet minimize disruption to the orderly conduct of business.

This NNS experience with information technology, and data exchange in particular, is best related in terms of the company's involvement with the Department of Defense Computer-Aided Acquisition and Logistics Support (CALS) initiative. For purposes of this presentation, the NNS experience demonstrates the importance of the CALS initiative with digital data exchange as a key enabling technology.

Computer-aided Acquisition and Logistics Support (CALS) is a Department of Defense (DoD) program initiated in 1985. At about this same time, certain industries began the same kind of approach for various business reasons. One CALS goal involves the transition from paper-intensive acquisitions and logistics processes into highly automated and integrated modes of life cycle support for the weapons systems of the 1990s. The potential reduction of the approximately 16 tons of paper documents that are carried on the Los Angeles class submarine (SSN688) to less than a ton of digital equipment and media, presents a most compelling reason to address the Navy's CALS objective of the paperless ship. The exchange of this large volume of paper-based data is not only a weight and mass problem, but the ability to retrieve, use, and update that amount of paper is a formidable task. In electronic form it is imminently simpler and more effective.

CALS is intended to provide a basis for understanding between inter-government and government/contractor organizations to use and transfer technical information in digital form. Important objectives of the CALS program include improving the timeliness and accuracy of data, reducing operational cost, and improving the quality of weapons systems and their supporting technical data.

NNS is deeply involved in CALS. Since the purpose of CALS is to enhance the manufacturability, maintainability, reliability and ultimately improve the availability of weapon systems through the use of computer technology, electronic data interchange is embedded in the concept.

Newport News Shipbuilding experience shows that the electronic exchange of business information is not only a necessary investment but provides mutual advantages to those companies that implement it wisely. NNS transfers data in practically all forms of electronic media including: magnetic tape, diskette, direct communication link, and communication links employing satellite transmission. Data is exchanged via mutually developed formats and government and industry standard formats such as the Initial Graphics Exchange Specification (IGES). In most cases, a mutually agreed upon form of translation is used to convert data at each company or government organization.

In the early 1980s NNS initiated the electronic data transfer of payroll and direct deposit information to the Federal Reserve Bank. Since that time, the expanded electronic data transfer includes ship design and logistics support data, purchase order processing, employee benefits, employee hospital care pre-certification transactions, and expanded direct deposit payroll data transmitted to financial institutions.

Since NNS recognized the importance and impact of EDI on the competitive market many years ago, we have a strong record of involvement in the various industry groups and organizations that are developing standards for all forms of electronic exchange of data. NNS continues to maintain an active presence on standards development groups such as:

- Computer-aided Acquisition and Logistics Support (CALS) Industry Steering Committee
- Initial Graphics Exchange Specification (IGES) and Product Data Exchange using STEP (PDES) (STEP is defined as Standard for Exchange of Product Data) organization led by the National Institute of Standards and Technology (NIST)
- Navy/Industry Digital Data Exchange Standards Committee (NIDDESC) formed in June 1986
- PDES Inc.
- The Executive Support Group for a National Implementation Plan for Product Data.

II. DOD/DLA EDI CONTRACTOR REQUIREMENTS

NNS is actively involved in numerous CALS and DoD advanced computer technology projects that are designed to increase operational readiness and provide savings to the Navy. The objective of these projects is to reduce lead times, reduce cost, reduce paper handling and storage, and improve data quality and accuracy. The complexity of these projects range from the use of electronic exchange of business data, to the development of advanced systems that are on the leading edge of technology. The SEAWOLF (SSN21) Submarine design contract calls for an all electronic design of the ship and contains requirements for electronic exchange of that data between NNS, the Navy, and the Electric Boat (EB) Division of General Dynamics. SEAWOLF is a primary CALS platform. It is the only major CALS weapons system funded and actually under development at this time. As a CALS project, it provides the opportunity for many levels of research and fact finding into advanced technology.

A. THE SEAWOLF PLATFORM. The SEAWOLF (SSN21) submarine detail design project involves two private shipyards. NNS, as the prime contractor, was awarded the lead design yard contract and is responsible for the overall design of the submarine, and the detailed design of the entire forward section. In addition, NNS is responsible for the integration of design data developed by the Propulsion Plant Designer. General Dynamics Electric Boat Division was awarded the Propulsion Plant contract and is responsible for the design of the propulsion plant and the aft end of the vessel. This unique relationship, in fact, means that our competitor is also our subcontractor. NNS will, in turn, support Electric Boat in their construction of the first ship. SEAWOLF is designed so it can be constructed in either shipyard. This approach is made possible only by exchange of electronic data.

B. SEAWOLF PROMOTES THE USE OF EDI. The SEAWOLF program is instrumental in promoting the use of EDI. In 1985 a SEAWOLF digital data exchange project was initiated because it was the most logical approach to accommodate the dual/"team" design effort.

The joint SEAWOLF digital data exchange project, comprised of NNS, NAVSEA, and EB, formed a guidance committee consisting of 4 working groups. Each group had objectives to develop specific aspects of data exchange. The Group A objective involved the development of data exchange capability for word processing text. This non-processible data is considered a one-way transfer. The Group B objective concerned development of an exchange capability for processible data or "structured text." This category includes drawing indexes, bills of material, and material catalogs. The Group C objective required the development of the capability to exchange digital drawings (defined as drawing data) between dissimilar computer systems. Finally, the Group D objective focused on the capability to exchange 3D structural and distributed system data between different CAD systems. The areas of Structural, Machinery, Piping, Electrical, and Ventilation, which create the product model, have unique issues concerning the exchange of geometry and attributes (material specifications, weight functions, etc.). **Figure II-1** illustrates the SEAWOLF digital exchange project.

Contractual requirements of the SEAWOLF digital data exchange project required the electronic exchange of complex engineering drawings using IGES, and 3D product modules of the ship structure and piping system. This electronic data exchange eliminates many redundant activities and reduces the number of errors caused by misinterpretations of paper drawings. Fabrication and construction data can also be exchanged electronically with suppliers, wherever it makes sense to do so. This exchange method eliminated the

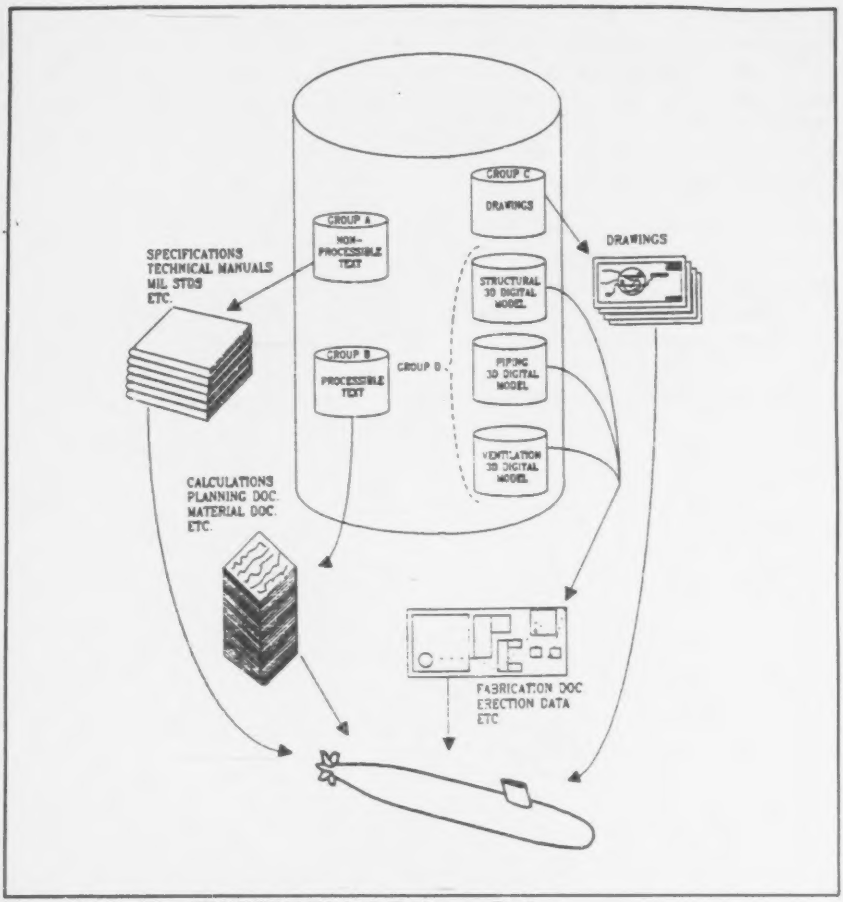
GROUP C
DRAWINGS
DRAWINGS
GROUP A
NON-PROCESSIBLE TEXT
SPECIFICATIONS
TECHNICAL MANUALS
MIL STDS
ETC.
STRUCTURAL 3D DIGITAL MODEL
GROUP B
PROCESSIBLE TEXT
GROUP D
PIPING 3D DIGITAL MODEL
VENTILATION 3D DIGITAL MODEL
CALCULATIONS
PLANNING DOC.
MATERIAL DOC.
ETC.
FABRICATION DOC
ERECTION DATA
ETC

Figure II-1. The SEAWOLF Digital Exchange Project

reinterpretation and reloading of data from paper drawings. The reduction of errors by automating this process will save many thousands of dollars in correction costs in the long term.

III. NNS' SHARING OF INFORMATION

NNS is actively involved in the electronic exchange of data with suppliers (both large and small businesses) and government agencies by using standards and mutually agreed upon formats and methods. NNS has determined that the sharing of data electronically reduces data redundancy, improves accuracy, and provides our organization with an additional level of competitiveness in the marketplace. The experience gained through the transfer of digital data provides NNS significant advantages and increases our ability to effectively respond to the future contractual implementation requirements of CALS.

A. IGES ENGINEERING DRAWING TRANSFER/EXCHANGE. NNS is actively working with NAVSEA and EB employing the IGES standard to electronically exchange engineering drawings. The use of Computer Aided Design/Computer Aided Manufacturing (CAD/CAM) technology within the shipbuilding industry offers a number of opportunities to exchange computer-based information between customers, designers, builders, suppliers, and repair yards. Our portion of the SEAWOLF contract requires that we exchange design and product model data with EB. Presently this interchange has consisted of all engineering drawings, 3D structural model, and 3D piping models. Additionally, NNS exchanges IGES formatted digital data with General Electric in support of SEAWOLF design and construction.

The transfer of SEAWOLF design data allows the recipient to load data directly into the shipbuilders' CAD system for use in fabrication and construction processes. The SEAWOLF project will take full advantage of digital exchange of CAD/CAM data.

NNS is an active participant in PDES Inc., the IGES/PDES organization (IPO), and the Navy/Industry Digital Data Exchange Standards Committee (NIDDESC). NNS has provided financial, material, and personnel resources to support the efforts of these organizations. PDES Inc. is a joint industrial/government effort to accelerate Product Data Exchange Specification development and implementation. PDES provides a computer interpretable definition of an object's physical and functional characteristics. NIDDESC is a cost-sharing venture that includes private firms such as NNS, and also government organizations. This effort originated from the Naval Sea Systems Command (NAVSEA) in cooperation with the National Shipbuilding Research Program. NIDDESC members include leading professionals in the marine industry representing several major design firms, private shipyards, public (naval) shipyards, and government research laboratories. Members are directly involved in CAD/CAM in their organizations and together represent a broad spectrum of experience and perspectives. The basic objective of NIDDESC is to develop an industry-wide consensus pertaining to product data models for ship structure and distribution systems. Current and past efforts include contributions to IGES, PDES, analysis of ship production data flows, and development of standards that supports CALS.

B. SAILSS AND EDI. The SEAWOLF detail design contract requires that NNS provide in electronic form, various data pertinent to the logistic support of the SSN21 class submarine. SEAWOLF Automated Integrated Logistics Support System (SAILSS), an NNS/Navy developed system, is a contractual requirement of the detail design contract awarded to NNS. It will provide life cycle logistics support for the SEAWOLF (SSN21) class submarine. Unlike previous classes of ships, a large part of the SEAWOLF logistics information is developed and accumulated during the design phase. EDI is an integral part of this program.

In addition to engineering design data being interchanged during the design phase, NNS also interchanges configuration data with EB and the Navy Ships Parts Control Center (SPCC) located in Mechanicsburg, PA. Provisioning (repair, parts, supplies) data is also exchanged with SPCC. NNS and the Navy will implement a communications network in the near future that permits exchange of logistics related data with SPCC, SUBMEPP (Submarine Maintenance Engineering Planning and Procurement), NAVSEA, and Electric Boat.

C. SCLSIS AND EDI. In the process of supporting the Los Angeles class submarines, NNS sends Ships Configuration and Logistics Support Information System (SCLSIS) data which is used to define the configuration of replaceable and/or repairable components onboard ships of the Navy, to SPCC and the Institute of Modern Procedures, Inc. (IMP), **a small disadvantaged business**, for processing, printing, and distributing the SCLSIS index.

IV. EDI IMPACT ON BUSINESS

The impact of EDI may appear to be burdensome in terms of resources required, costly in terms of participation in standards development and implementation, and, for some, is considered to be beyond their current capabilities. However, the perceptions about data exchange technology are far-worse than actual, and EDI is not necessarily the consuming resource intensive burden it appears to be. EDI is controllable, manageable, beneficial, and most businesses possess some capability to use EDI. Even without sophisticated data processing equipment, organizations can obtain the necessary tools and technical assistance to perform basic EDI. Those companies who don't take the necessary survival steps will suffer the consequences in the long term. Competitors who do employ EDI technology will benefit from lower costs and increased attractiveness to larger business partners. Involvement in EDI is as necessary a business decision as is buying office equipment, facilities expansion, and planning for market growth. EDI requirements from the Federal government are becoming commonplace -- Federal Reserve, Social Security, Internal Revenue Service, DoD contract deliverables, and proposal submissions are examples. EDI is practical, necessary, and rapidly becoming mandatory for business competitiveness and survival not only nationally, but internationally as well.

A. CALS/EDI NOT YET MANDATORY FOR NNS SUBCONTRACTORS. NNS fully supports the implementation of the growing body of CALS standards. This joint DoD/industry effort will facilitate data exchange and access as well as reduce duplication of the data preparation, storage and retrieval effort. However, a number of standards are not yet mature and commitment to "all electronic business" varies broadly. As a result, organizations' readiness to participate also varies. These variances in CALS compliance and responsiveness require a careful, common sense approach to the use of technology. NNS does not demand that all suppliers be CALS compliant or submit or receive data via EDI. However, we do encourage them to adopt CALS standards as applicable, including the use of EDI. NNS uses data received from suppliers to form NNS deliverables to the government -- and when appropriate we deliver information to the government via EDI using direct telecommunications links (computer-to-computer) or by submission of magnetic media (such as magnetic reel tape and diskette).

B. SUBCONTRACTOR RESOURCES. Most businesses today, large and small, possess at least minor EDI capability. If not computerized, an organization can become a user of EDI technology, starting with an investment in a personal computer. Since EDI currently does not have a universal standard format, the cost of the translator is determined on an individual company-to-company basis. Most translators are fairly basic and can be acquired or easily developed.

V. DOD/CALS IMPLEMENTATION

In addition to the SEAWOLF submarine design contract, NNS has successfully completed four CALS Demonstration Projects for the Navy. These proof-of-concept projects addressed CALS issues involving digital delivery of information, integration of logistics applications to avoid redundant processing of data, and the reduction in the use of paper-based logistics information. All projects were very successful and are being incorporated in new integrated logistics support processes for life cycle management of the SEAWOLF submarine.

A. THE NEUTRAL FORMAT -- CALS. When two or more computer systems are involved, problems in the exchange of geometry and mathematical definitions are compounded and a neutral format is decidedly advantageous. In the case of SEAWOLF, IGES is used to establish a neutral CALS format for the transfer of engineering design data, between NNS, the Navy, and General Dynamics/Electric Boat Division. Depending on the type of data transferred, a standard or neutral format is dictated by the requirement -- Federal Reserve, IRS, government contract deliverable, or related industry standard. The advantages of a neutral format exist with the ability of participants to use recognizable and predictable data formats. CALS is also a major force driving the development of PDES. Product data exchange is a significant CALS building block. It provides a complete and unambiguous, computer interpretable, definition of the physical and functional characteristics of each part of a product throughout its life cycle. **Figure V-1** illustrates Electronic Exchange Using a Neutral Format.

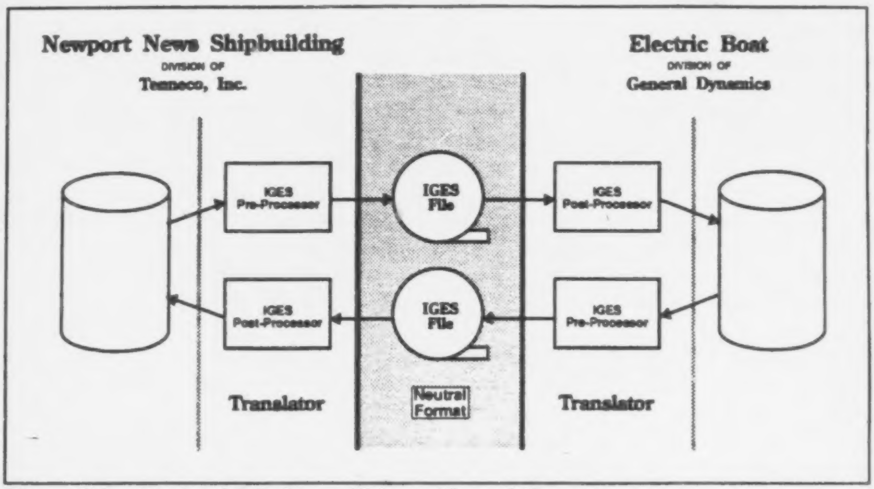
Newport News Shipbuilding
DIVISION OF
Tenneco, Inc.
Electric Boat
DIVISION OF
General Dynamics
IGES Pre-Processor
IGES File
IGES Post-Processor
IGES Post-Processor
IGES File
IGES Pre-Processor
Translator
Neutral Format
Translator

Figure V-1. Electronic Exchange Using a Neutral Format

B. NNS CALS IMPLEMENTATION. The SEAWOLF Automated Integrated Logistics Support System (SAILSS) is a joint NNS/Navy CALS Phase II compliant Integrated Weapon System Database (ISWDB). As a direct result of this system, the entire life cycle support process will be managed from a common database. The obvious advantage is that all parties, both the Navy and suppliers, will use the same information on which to base their decisions. This capability avoids the problems associated with "data synchronization" and accuracy problems caused by fragmented data stores that were not contained in a common database.

NNS is currently developing an additional CALS-related system for use in Naval Shipyards. This project provides CALS compliant computer software and hardware to deliver work procedures (engineering drawings, technical manuals, and other specifications) in digital/electronic form to the planning and technical trades at various Naval Shipyards.

These work procedures are based on databases at Newport News Shipbuilding and are the basis for actual work performed on the ship. The data interchange loop is closed when the record of completed work is transmitted back to NNS databases and to display the new "as is" condition of the ship.

VI. NNS ENCOURAGES USE OF EDI BY SMALL BUSINESS

NNS is a long-time active member of the CALS Industry Steering Committee. We co-chair the subcommittee on Concurrent Engineering and are involved members of other standards development organizations including the National Institute of Standards & Technology, PDES, IGES, NIDDESC, and, indirectly, the International Standards Organization (ISO). NNS offers encouragement and assistance to its suppliers directly via discussions, and indirectly through EDI oriented industry/associations and organizations.

A. MONITOR PROCEEDINGS OF PDES SMALL BUSINESS COMMITTEE. NNS is a major participant in standards development organizations such as the IGES/PDES organization and NIDDESC. PDES standards will be incorporated into the international standards organization (ISO) in support of the Standard for Exchange of Product Data (STEP). More importantly, with necessary dedication, commitment, and momentum, these standards can be applied internationally and be U.S. developed and driven.

Although not the primary goal of EDI, the adoption of standards with strong U.S. influence and content will help create a more favorable competitive international trade position. We strive to promote agreement regarding standard data formats, communication modes, and the development and acquisition of data translators. NNS monitors the proceedings of the PDES Small Business Committee and we are sensitive to the potentially negative impact to small business. We are concerned, as well, with industry's ability to work within and adopt standards being developed. The success of CALS and EDI depends largely on the broad acceptance and use of the related standards by industry. However, the current voluntary nature of CALS and EDI will change as compliance becomes more generally specified in contracts.

B. NNS SMALL BUSINESS EDI ASSISTANCE AND ENCOURAGEMENT. NNS makes technical assistance available, upon request, to our suppliers when they are transitioning to EDI. We provide the necessary encouragement and act as an experienced role model and advisor utilizing our background implementing various forms of electronic data exchange.

C. NNS CONTRACTING TO BUSINESSES USING EDI TECHNOLOGY. NNS actions in the future will undoubtedly be based to a large extent on government requirements which necessitate subcontracting with organizations that have successfully implemented EDI. Those businesses with the proper forethought and initiative to implement a reasonable form of EDI will realize the benefit since they will be more attractive as a partner to prime contractors who contractually must meet some form of EDI requirement.

VII. IMPLEMENTATION OF EDI BY SMALL BUSINESS

In the future there may be a greater number of small businesses using some form of EDI than perhaps their larger business counterparts. Initial participation and implementation will probably be less of a problem to the small business than was previously envisioned. However, when EDI requirements extend beyond the transfer of text data to something more complex such as detailed design information, the difficulties for the small business will grow in proportion. EDI has a wide spectrum of entry, from the very elementary to the very complex. The place of entry will decide a companies ability to participate! Implementation of EDI by the small business, in fact, will depend largely on the type of work being performed. For example, if the contractor is only required to deliver technical documentation via electronic transfer, then a personal computer with the recording device similar to that used by the contracting agency would be required. However, if the contractor was required to deliver complex design and product model data, extensive computer capabilities could be required.

A. NNS' EDI DISCUSSIONS WITH SUBCONTRACTORS. NNS, realizing that the move toward EDI is becoming stronger, has increased its role in encouraging its suppliers to institute the use of EDI. NNS stresses the benefits of employing EDI and also points out the potential disadvantages of ignoring it, including the inability to compete when EDI is dictated by government contractual requirements.

B. CURRENT EDI WITH SUBCONTRACTORS. The growing amount of contractual expectation about technology requires exploration of new techniques in electronic data transfer. NNS uses data exchange to support various applications including: engineering, logistics support, manufacturing, financial, and administration. A sample of the organizations exchanging data with NNS via electronic data transfer is provided as follows:

ENGINEERING

- **Electric Boat - a Division of General Dynamics - Groton, CT:** Electronic exchange of complex geometry data related to detail design employed to construct the SEAWOLF submarine
- **Fairbanks Morse - a Division of Colt Industries - Kansas City, MO:** SEAWOLF design-related CAD drawing data is exchanged utilizing magnetic tape media
- **J. J. Henry Co., Inc. (small business) - New York, NY/Morrestown, NJ:** NNS exchanges CAD drawings related to sub-contracted SEAWOLF engineering design functions
- **J. J. McMullen and Associates, Inc. - Newport News, VA:** SEAWOLF-related design CAD drawing data is exchanged in support of the SEAWOLF project

- **U. S. Navy:** Numerous NAVSEA organizations participate with NNS in the electronic exchange of engineering design drawings, structured bills of material and other manufacturing information and logistics/life cycle management data.
- **Northern Research and Engineering Corp. - Woburn, MA:** Magnetic tape media containing SEAWOLF design drawings is exchanged in IGES format.

LOGISTICS SUPPORT

- **Institute of Modern Procedures, Inc. (small and disadvantaged business) - Alexandria, VA:** Magnetic media is provided to IMP, Inc. for development and distribution of technical documents in support of Ships Configuration and Logistics Support for Los Angles Class Submarines (SSN688)
- **U. S. Navy (SPCC, NAVSEA Logistics Center (NSLC), SUBMEPP, and NAVSEA):** Logistics related data is electronically exchanged with numerous Navy agencies

MANUFACTURING, FINANCIAL, AND ADMINISTRATIVE

- **Williams and Watts, Inc. (small business) - Fairfield, NJ:** A portion of our Purchase Order process is sub-contracted to this company. EDI is used in support of the request for quotation by the exchange of vendor master and preliminary requirement data. The mutual benefit is realized in the processing of approximately 7,000 requisitions per year. NNS benefits from this arrangement by reducing labor requirements, material cost, and purchase order processing time. Williams & Watts benefits from additional revenues and improved margins on their labor costs.
- **NNS Employees Credit Union - Newport News, VA:** Electronic transfer of employee payroll data including: direct deposit, employee savings account deductions, and loan deductions.

NNS conducts business with approximately 3,800 suppliers. We anticipate that these companies will begin to embrace information technology based capabilities for a variety of reasons and in various ways. As this occurs, decisions will be made on a case by case basis how to mutually exploit this position. It would not be surprising to see small businesses leading the way since they tend to make decisions and changes more quickly than their larger counterparts.

VIII. BUSINESS ISSUES

EDI is an achievable goal and will prove to be very beneficial to those businesses who aggressively embrace this technology. However, there are a number of issues facing businesses today as they move towards EDI and a greater reliance on information-based tools. Although the issues are significant, the majority of them can be resolved with less "pain" than most businesses imagine.

The main issues and concerns common to most businesses involve fear of the unknown, the perceived "threat" of technology, cost of implementation, inability to meet standards, security, and data control and access issues. On balance however, the majority of issues can be dealt with successfully by forward thinking and planning, regardless of the company size. The payoff is that they will become competitively positioned to capitalize on greater business opportunities using EDI technology. Although small businesses may feel threatened by EDI, they may be in a good position to implement EDI, simply because they can move quickly and make the necessary decisions to purchase the resources and services required to implement an acceptable entry level EDI.

A concern of many organizations is the potentially significant cost to participate in standards development organizations, such as PDES, which consist primarily of major corporations. Realizing this concern, the government provides ongoing support and encouragement to small business "watch dog" committees and organizations which provide industry oversight to safeguard the interest of small business.

There exists a misconception that in order to participate in EDI a company must invest heavily in building a large and complex computer system to effectively accomplish EDI, in effect the "swallowing the whole elephant" syndrome. This is not the case with EDI, since it can be successfully implemented in small "bite-size" increments such as exchanging data on diskettes, delivering greater volume via magnetic tape, and ultimately processing computer-to-computer data exchanges.

A very serious concern is centered around data security and integrity. For example, if a government defense contractor maintained classified information on a computer system that allowed direct remote communications access, it is possible that unapproved access into sensitive data could occur via EDI. Most direct access concerns would be lessened with the alternate method of exchanging magnetic media such as tape and diskette -- the easiest and least expensive approach to EDI. A related concern centers around ownership of data which involves the issue of control and who actually owns the data.

A. EDI CONTRACTUAL FLOW DOWN. The government now requires that the contractor deliver products via the use of CALS/EDI (for CALS related contracts issued after September 1988). Although NNS has not formally required that our suppliers provide contract deliverables via EDI, we discuss and encourage the use of EDI with our suppliers, wherever appropriate. Eventually, NNS will undoubtedly include a flow down clause in an increasing number of subcontracts, requiring that delivered work related to CALS/EDI type contracts be delivered in electronic form.

IX. IN CONCLUSION

The effective and efficient exchange of electronic data is a key element in addressing many of the productivity and quality issues facing U.S. businesses. New and better tools are rapidly becoming available. The Federal government is involved in the proliferation of EDI and associated technologies through contractual terms with its suppliers. Its role in the move toward wider use of EDI can become increasingly proactive by providing incentives and assistance to businesses, where appropriate. Technical assistance, formal training, advice, and communication of facts to all interested businesses (possibly by the Small Business Administration) can be instrumental in transitioning to EDI. Perhaps the most effective way to accelerate implementation of technology that affects U.S. productivity is to provide incentives through competitive procurements that recognize those organizations who are making the commitment.

NNS experience in EDI has shown clearly that we must vigorously participate in the various standards development organizations and government initiatives. This approach is mandatory to position NNS to efficiently and effectively support current and future government and commercial business. Problems associated with EDI are similar for both large and small businesses. Dealing with the issues is less a situation of unique problems than of dealing with size and scope. Businesses who understand and harness EDI can compete far more successfully than those that try to ignore it. It is also possible to look beyond the fact that EDI, in its various forms, is a challenge and an expense and a source of some discomfort as it changes the way we do business. Because it is based on technologies that will continue to develop and mature over time, it also creates opportunities. There are opportunities for organizations of all sizes to modernize, improve quality and responsiveness and, therefore, become more competitive. EDI is creating new markets for developers of solutions to data interchange problems such as translators, neutral formats, software packages and hardware devices. Undoubtedly, many of these products will be developed by small business entrepreneurs. The NNS experience provides strong evidence that rapid incremental implementation of EDI technologies is both possible and necessary to establish and maintain a competitive position in national and international marketplaces.

STATEMENT
OF
JUDITH E. PAYNE

Associate Social Scientist
The RAND Corporation
Santa Monica, California

U.S. House of Representatives Committee on Small Business
Subcommittee on Exports, Tax Policy, and Special Problems
and the
Subcommittee on Environment and Labor
June 18, 1990

Statement
of
Judith E. Payne
The RAND Corporation
Santa Monica, California

Mr. Chairmen and members of the subcommittees, thank you for the opportunity to appear here today. I am an Associate Social Scientist at The RAND Corporation. The views and conclusions I will express today, however, will be my own. They should not be interpreted as representing those of The RAND Corporation or any of the agencies sponsoring its research. RAND is a private, nonprofit institution engaged in research and analysis of matters affecting national security and the public welfare.

I am the co-project director of a RAND study to examine how the Department of Defense (DoD) can use EDI to enhance defense logistics. Logistics encompasses transportation, supply, procurement, and maintenance and repair. The study began in early 1989 and is sponsored by the Office of the Assistant Secretary of Defense (Production and Logistics). Its summary report is now in draft form and being reviewed in RAND's internal peer review process. The research has been carried out within the Acquisition and Support Policy Program of RAND's National Defense Research Institute. My comments today are based on this on-going research.

EDI IN THE DEPARTMENT OF DEFENSE

Electronic data interchange (EDI) enables "electronic commerce," advocated as one of the most important applications of computer technology for improving the nation's productivity -- moving both private and public sector business from a paper-based world to one based on electronic transactions. EDI enables businesses as well as DoD to use many new techniques to manage resources better, responding quickly to changes in demands, and avoiding the need to project requirements so far into the future.

The use of EDI in the private sector has been increasing steadily since the transportation industry led the way in the late 1960's. Defense components (Services and Defense agencies such as the Defense Logistics Agency) have also started to use EDI in dozens of efforts. In May 1988, the Deputy Secretary of Defense issued a policy directive that EDI was to become the "way of doing business" for the Department of Defense in the future. The question for Defense components became not "whether" to use EDI but where and how to implement it first.

Implementing any new application of technology is a difficult and often costly process even when the technology is well developed and the technological infrastructure is in place. Expected gains are often hard to achieve. Therefore, the RAND study focused on four questions:

- Given that EDI is to be DoD's way of doing business, where are the best target uses of EDI to enhance the logistics process?
- How might the logistics process itself need to change to take advantage of EDI?
- What current policies and procedures need review to enhance the potential benefits of EDI in defense logistics?
- How should DoD approach EDI software development and network support?

PRELIMINARY CONCLUSIONS

Based on the study analysis, there appear to be five promising ways EDI can be used to directly or indirectly improve logistics processes, that is, improve how well logistics functions deliver to the end user what the user wants, when it is needed, at reasonable cost.

1. Shorten procurement administrative lead time (PALT): presolicitation for large and small contracts; solicitation and award especially for contracts under $25,000; or order placements against approved contracts of any size. As PALT drops, DoD will not have to anticipate so far into the future what it will need: buying decisions can be made closer to when

items are needed, reducing needed stockage levels *and* excess stocks caused by inevitable errors in projecting demands.

2. Broaden and speed access to the industrial base to enhance procurement responsiveness, especially in areas where sources are hard to find and where there may be untapped private sources. This includes making it easier for vendors to do business with DoD.
3. Enable tighter, more dynamic control over vendor performance of all sorts, especially to monitor the timely shipment of purchased goods from vendor sites within agreed upon time frames; avoid congestion in transportation pipelines or at transportation nodes; and dynamically prioritize contractor weapon system repair.
4. Provide short-term, accurate "heads up" to logistics pipeline actors within and outside DoD, for example to improve the timely management of DoD receiving points or to provide visibility to item managers of pending assets from contract repair facilities.
5. Enable better responses to unpredictable surges in demands for critical goods or services.

SOME PREREQUISITES AND OBSTACLES TO ACHIEVING POTENTIAL GAINS

We identified several prerequisites and obstacles to achieving benefits in these target areas. One important prerequisite is the use of various electronic instruments now emerging in the electronic marketplace, such as electronic bulletin boards and brokers, cross vendor stock-availability data bases, and electronic agents, i.e., computer programs working with EDI transactions in the owner's interest.

A significant obstacle to the use of EDI currently within DoD appears to be uncertainty about the effects electronic commerce will have on small businesses. This uncertainty needs to be addressed in order that DoD not be unreasonably hampered in its efforts to achieve the gains in efficiency and effectiveness offered by EDI. Each of the suggested target areas may affect the tens of thousands of small businesses selling goods or services to DoD or interested in doing so.

It is important that DoD's approach to electronic commerce not introduce a barrier to qualified small businesses for at least two reasons:

1. By law, DoD is required to procure goods and services using full and open competition among all responsible sources, including small and disadvantaged businesses. In FY88, 9 million of DoD procurement actions were with small businesses for some $25 billion: 69 percent of all such DoD actions for work in the U.S.[1]
2. For responsiveness during surges in demand especially, DoD needs broad access to as much of the U.S. industrial base as possible, including small businesses.

HOW DOES DOD'S USE OF EDI AFFECT SMALL BUSINESSES?

The answer to this question will depend on *how* DoD implements EDI in specific applications and how its overall EDI infrastructure is designed. EDI can be used in many ways to actually *reduce* barriers to small firms conducting business with DoD. For example, EDI applications can be designed to "level the playing field" between large and small firms by making information on buys as close as a modem and a personal computer; reduce redundant document submissions; enable firms to be paid faster; and standardize transaction formats across the hundreds of DoD buying points. In such ways, EDI can reduce the effort needed to do business with DoD for large and small firms alike. These capabilities enabled by EDI may have a more positive effect for small businesses for they may have had fewer resources than larger firms to overcome these costs of doing business with DoD in a paper-based environment.

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[1] These transactions accounted for 19 percent of the dollar value of procurement amounts. This excludes 1.1 million transactions from work outside the U.S. with foreign or domestic firms and another 1.1 million with foreign governments, U.S. government entities, or education and nonprofit institutions. Department of Defense Summary of Procurement Awards (Format Summary), October 1987 - September 1988, Washington Headquarters Services, Directorate for Information Operations and Reports.

In contrast, if DoD were to implement EDI to make only transactions and reporting on very large contracts easier, or in such a way that DoD vendors would themselves gain little or nothing from electronic commerce and have to invest in specialized equipment and software, the effects could be detrimental to small businesses.

There is little, systematic empirical evidence to date on the actual effects on small businesses of DoD's use of EDI or whether EDI poses a barrier -- an unreasonable obstacle -- to small businesses working with DoD. No comprehensive survey has been conducted, no polls taken, no study done to answer this question. We do not know how many small businesses now use EDI, nor how many have the requisite hardware and software. We do know several things that at least shed light on the question.

(1) Small (and large) businesses already face obstacles to doing business with DoD for which various mechanisms operated by DoD and SBA (and others) attempt to compensate. These firms sometimes have trouble finding out what DoD wants to buy; they have to use forms that differ across DoD's hundreds of buying points; they must follow prescribed steps precisely in order to get paid; and then sometimes have to wait months to receive payment. For these and other reasons, some surmise that many firms, small and large, decline to do business with DoD already.[2]

(2) In 1989, the Comptroller General ruled that an Army Corps of Engineers' solicitation requiring that cost proposals be submitted on computer disk was not unduly restrictive, because submitting information in this way reduced time and errors in proposal evaluations and complying with the requirement was relatively inexpensive. (The Army provided preformatted and programmed diskettes to offerors.)[3]

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[2] See, for example, Under Secretary of Defense (Acquisition), *Bolstering Defense Industrial Competitiveness, Preserving Our Heritage, Securing Our Future,* Report to the Secretary of Defense, July 1988, p. 36. This problem extends to the second tier of DoD suppliers as well, as illustrated by this excerpt from the above reference: "Many desirable, highly-qualified suppliers refuse to do business with defense prime contractors because of the sheer weight of compliance with the body of laws, regulations, rules, and procedures that primes are required to pass through from the Government to them."

[3] Comptroller General Decision B-234490, May 26, 1989.

Hence an electronic transfer of data -- albeit on diskettes -- was judged not to be an undue barrier because of the way it was implemented and the significant gains to the Army.

(3) Roughly half of small businesses already have the basic hardware to send and receive EDI transactions.[4]

In late 1989, we conducted a survey of the 42 vendors selling medical products to the Defense Logistics Agency's (DLA's) Defense Personnel Support Center (DPSC) for overseas medical facilities using DPSC's version of SPEDE,[5] an EDI system. SPEDE electronically solicits, receives and evaluates bids then makes awards to the pre-qualified vendors with established blanket purchase agreements. Seventy-eight percent of the vendors responded and all but one respondent was a small business. Half of the respondents already had PCs before SPEDE went on-line, and half already had modems.

Those implementing EASE,[6] a procurement bulletin board for small purchases at NSC (Naval Supply Center) Jacksonville, anecdotally report that when they introduce EASE at meetings with vendors, well over half of the vendors indicated they have the requisite equipment.

(4) For those vendors without these capabilities, the minimum hardware and software buy-in cost is roughly $3,460:

PC (IBM PC clone, AT-class)	$ 1,200	
2400-baud modem	410	[*]
24-pin dot-matrix printer	400	
Software communication package	250	[*]
Software package for EDI translation and transaction handling	1,200	
Purchase price	$ 3,460	

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[4] The 1988 report *The State of Small Business* (U.S. Government Printing Office) shows computer use by firm size (1985 statistics). These data indicate that 54% of firms with 10-19 employees use computers; 73% usage with 20-49 employees; 82% with 50-99 employees. These figures have probably risen significantly during the succeeding five years with the growing availability of inexpensive yet powerful personal computers.

[5] SAMMS (DLA's Standard Automated Material Management System) Procurement by Electronic Data Exchange.

[6] Electronically Assisted Solicitation Exchange.

The prices marked [*] are average prices paid by those SPEDE vendors purchasing PC equipment. All of these price estimates are volatile, subject to frequent changes, usually downward.

Of course, a business may choose to buy a better computer to use for other business purposes, may lease or share equipment, or decide to have a dedicated phone line for its EDI transactions. Also, these costs do not include the time needed (and perhaps help) to set up electronic interfaces with internal systems so EDI transactions actually remain in electronic form.

If a small business' transactions are not currently computerized, this PC configuration could be used initially merely to electronically connect to various databases (or receive down-loading telephone calls from DoD agencies preferring that mode of operation) and print any RFQs, RFPs, or other transactions relevant to the business. Similarly, responses to RFQs could be generated by filling blanks in a displayed form on the PC monitor. In this case, no translation from X12 formats into local formats is required, because there are no locally pre-established data formats. The X12 data would simply have to be displayed in human-readable form--a capability provided by many of the PC-based EDI translation software packages.

On-going costs to use EDI will vary widely depending on how DoD's electronic infrastructure for EDI is designed. If DoD were to provide free electronic mailboxes for interested vendors on a DoD wide area network (WAN), on-going vendor costs for telecommunications might be that of local phone calls. Similarly, if DoD were to deliver and pick up all electronic transactions by calling vendors directly, on-going telecommunications costs would be immaterial for these vendors. Alternatively, if DoD does not provide such mailboxes or a vendor chooses not to use one, the vendor could use a mailbox on a commercial WAN. Costs for this arrangement would vary based on the WAN's charging structure and any discounts negotiated by DoD or vendor groups. For example, NSC Jacksonville has negotiated a flat rate of $50 per month for EASE users to use CompuServe's commercial WAN. (This offers considerable savings to some active users of EASE, some of which had monthly bills in the hundreds of dollars before such a price was negotiated.) So $50 a month is a reasonable low end estimate for a vendor using a commercial WAN. A high end estimate could vary by level of usage. Each transaction might cost roughly $ .82, including a minimum monthly charge of $25 for an electronic mailbox.

Are such costs above or below current transaction processing costs for businesses, large or small? We do not know. Postage alone for sending transactions via mail is likely cheaper than via EDI. And several large businesses have documented significant reductions in transaction processing costs using EDI. But, again, it depends on how a firm implements EDI and how it conducted business without EDI.

Several SPEDE vendor respondents commented that using SPEDE to conduct business was more efficient and faster. Presumably, this translates into net cost savings. (No vendors DPSC asked to become SPEDE vendors at the outset of the prototype refused to do so.) In fact, when asked how much they would be willing to pay monthly if a SPEDE-like system gave them access to more DoD buys, 27 percent reported they would pay up to $50 and another 18 percent, over $100.[7]

(5) Our survey of SPEDE vendors also revealed several other points relating to this one EDI application's effects on its small business users:

- On a scale of 1 to 5, 1 meaning "much better" and 5, "much worse," 40 percent of respondents rated doing business with DPSC using SPEDE as 1 or 2.
- Asked whether SPEDE was more reliable than a more traditional phone-based bidding system, 73 percent of respondents rated SPEDE as 1 or 2 on the same scale.
- One third of respondents noted that SPEDE was easier and faster than the pre-SPEDE procurement procedures which were already automated using a less sophisticated system.

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[7] All SPEDE vendor survey respondents were small businesses.

- Seventy-six percent reported they would be more interested in SPEDE if it enabled them to bid electronically on RFQs from other DoD buying points and even from non-DoD buyers.

(6) Several of DoD's first EDI applications involve small businesses. Of thirty vendors involved in DCSC's successful POPS (Purchase Order Paperless System) system for placing electronic orders for direct delivery of items, 16 are small businesses. According to a DoD Inspector General report, this EDI application also resulted in possible inventory savings of $11.2 million and reduced second destination costs by $732,000 in FY85. DPSC has since extended the use of POPS.[8] As mentioned above, 97 percent of SPEDE vendor respondents identified themselves as small businesses.

Interestingly, some private firms anecdotally report that small businesses are often better suppliers to have in direct stock delivery arrangements such as are needed for just-in-time inventory management, because a larger share of the small firm's business is directed to supporting one large firm. DoD may find the same, making the shift toward more indefinite delivery contracts facilitated by EDI (as used by POPS) less of a threat to small businesses than it first might appear.

(8) Despite projections for widespread use by the mid 1990s, most firms in the U.S. do not yet use EDI. We do not know how many small businesses use it, but in a recent survey across all firms, only 17 percent reported using EDI to even a limited extent.[9] In the same survey, many companies were unable to answer whether EDI had brought them net benefits, but almost three times as many reported that, so far, EDI was a net cost. But this is not surprising given that these firms' up front investment had not yet been spread across many transactions. A significant number were still using EDI in a pilot stage and 75 percent reported trading with fewer than 50 partners and half of these had less

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[8] Office of the Inspector General, *Audit Report, Electronic Contract Ordering System,* No. 87-188, Department of Defense, July 10, 1987.

[9] Masson, D. J. and Ned C. Hill, "The State of U.S. EDI: 1989," *EDI Forum,* Volume 2, 1989, pp. 16.

than ten trading partners.[10] Over 300,000 firms are interested in doing business with DoD.[11]

POSSIBLE STEPS FOR DOD'S USE OF ELECTRONIC COMMERCE TO ENHANCE THE FULFILLMENT OF ITS MISSION WHILE BENEFITING SMALL BUSINESSES

In summary, given its cost to vendors, EDI would not appear to pose a significant cost barrier to doing business with DoD for most firms even today. In fact, many may find they receive net benefits from EDI in lower transaction costs and *reduced* barriers. But EDI is not yet a wide-spread business practice, so many DoD vendors may first use EDI as DoD extends its use of it.

There are several steps that DoD might take to use EDI to reduce costs and enhance effectiveness as well as benefit small businesses. DoD is already pursuing some of these.

First, DoD can work with SBA, industry groups and other interested organizations to determine whether EDI poses a significant barrier now to small businesses and, if so, to what extent, in what ways, and for what industries or types of businesses.

Second, DoD could work with these same organizations to demonstrate to small businesses alternative ways to use EDI and how to gain net benefits from its use. OSD (the Office of the Secretary of Defense) is already pursuing this course by exploring with private sector volunteers ways DoD's Intelligent Gateway could facilitate small business use of EDI.

Third, DoD's software, hardware, and telecommunications infrastructure can be designed to facilitate the use of EDI by small businesses. As DoD is now planning to do, this infrastructure should incorporate to the extent possible transaction and communications standards used by industry. Again, as DoD plans, DoD should present a "single face" to industry, so vendors, large and small, have clearly defined points of electronic access to DoD's many buying points.

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[10] Ibid., p. 7.

[11] In FY89, 335,000 firms had CAGE codes, meaning they have done or have confirmed their interest in doing business with DoD within the last three years, for entries in the CAGE file are confirmed on a rotating, three-year basis.

Fourth, this infrastructure for EDI should accommodate multiple telecommunications routes to DoD's "electronic door" for vendors, depending on their preferences. For example, some firms may want to exchange transactions with DoD via electronic mailboxes on various commercial WANs. Others may not be able to receive transactions in electronic form, but only via facsimile machine or even conventional mail. DoD's EDI infrastructure can be designed to accommodate these alternate routes while minimizing, if not eliminating, the need for DoD to maintain dual systems where EDI is the best form of transmission for DoD. As long as transactions leave and arrive at DoD's "door" in electronic form, DoD will derive most of its internal benefits from EDI.

Thank you again for the opportunity to appear today. I would be happy to answer any of your questions.

------- End of Forwarded Message

Committee on Small Business
Subcommittee on Exports, Tax Policy, and Spacial Problems

Rayburn House Office Building, Room B363

Testimony of Electric Motor and Contracting Co., Inc.

3703 Cook Blvd.
Chesapeake, Va 23323

Presented by Guy L. Bilodeau, EE

Testifying on Electronic Data Interchange

June 12,1990

Electric Motor and Contracting Co., Inc., was found in 1960 by James L. King. Electric Motor and Contracting is a full service electrical apparatus repair facility. We are a small business which services the greater Tidewater area in Virginia. Our services span the entire field of industrial electrical service and contracting. Although EMC is primarily an electric motor repair facility, we also design and manufacture motor control systems, and perform outside service work. Our outside service department installs new industrial controls, refits old control systems, and troubleshoots existing control systems. Our service technicians work both on industrial and military facilities. Our service department also has qualified shipboard electricians for any power system aboard a military or civilian ship.

In addition to our service business we also have an industrial sales department. We carry a wide range of electric motors, replacement parts for motors, and motor controls. This part of our business was developed in order to better serve our customer base. Our civilian customer base ranges from one man businesses to large conglomerates. Our government customers include Navy, Coastgaurd, Army, Airforce, NASA, FAA, Marine Corps and Military Sealift Command. Our vender base is just as diverse as our customer base.

Our diverse customer and vender base made us a prime candidate for Electronic Data Interchange. Our first motivation to become Electronic Data Interchange (EDI) capable came from our participation in a seminar given by Champion Paper Company. At this seminar we were introduced to the concepts of the EDI trading partner system. This seminar covered all the major advantages of EDI. The time, labor, and money savings that could be gained using EDI were explained in detail. The ease of starting a pilot program with a third party system, using Harbinger Computer Services was explained. A demonstration of the available software written by Harbinger, was given.

The selling points that were important to EMC were that the system be easy to use, secure, inexpensive, and ultimately save the company money. The EDI system that was demonstrated to us took very little training to run successfully on an IBM PC compatible system. The security of using a third party, instead of having trading partners entering directly in our computer files was a very attractive feature. We have had offers to trade with our customers in the past via direct electronic interchange, but these systems were expensive and allowed the customers access to sensitive company information. The cost of start up on a IBM PC compatible was well within our budget. The time saving ability of EDI was also very attractive. After being introduced to these benefits we decided to start a pilot program with Champion Paper Co. to determine the feasibility of implementing a large EDI system at EMC. After a test document was sent from Champion Paper Co., our system has worked flawlessly. We have moved cautiously with our pilot program in order to avoid overextending our capabilities at any given time. We are also developing a new computer system at the same time we are expanding our EDI capabilities, which has slowed our EDI expansion. In the following months we plan to add several new partners to our system. Hopefully, we will be able to add government facilities to our system in the near future.

Electric Motor and Contracting uses a third party EDI system with Harbinger Computer Services as the third party. Our system runs on a desk top IBM PC compatible with a 40Mb hard drive, a printer and a 2400baud modem. The software we use is InTouch*EDI which was written by Harbinger. Harbinger's system handles documents in the ANSI X12 protocol. Our software performs all uploading and downloading functions automatically. The cost of adding EDI to our existing computer system was minimal. We already had the PC and printer on sight, so we only needed to add a modem and software. The cost of start up for a full EDI system was less than $700.00.

Electric Motor and Contracting has been using EDI with one trading partner for 12 months. We are now capable of trading purchase orders, change orders, acknowledgements and invoices. We are now confident in the future of EDI and are preparing to expand at a much faster pace than the previous year. Once multiple partners are developed, the time and labor savings should increase greatly.

These time savings should come from less paper work and fewer duplicated actions. We will be able to eliminate a considerable amount of time spent filing, mailing, receiving, and tracking down paperwork. At this time we still waste a considerable amount of time sending our drivers to pickup or deliver paperwork.

We feel that the growth of EDI will continue. We are hopeful that large business and government agencies will help small business develop their EDI capabilities. In Electric Motors and Contracting's case, Champion Paper Company has helped EMC greatly in our efforts to become fully EDI capable. The adoption of a government standard that is compatible to ANSI X12 will make the adoption of EDI by small business much easier. As with one of our customers that insists on an electronic transfer of data conforming to their special specifications, any deviation from ANSI X12 costs both trading partners money. Each nonstandard trading partner diminishes the benefits of EDI to both users. If no common industrial/government standard is developed, it will bring extra financial burdens to small business that do work in both sectors, and will slow the growth of EDI.

THE COMMERCIAL USE OF ELECTRONIC DATA INTERCHANGE – A REPORT

Prepared by the Electronic Messaging Services Task Force

Presented to the Subcommittee on Electronic
Commercial Practices and the Subcommittee on
Scope of the Uniform Commercial Code,
Committee on the Uniform Commercial Code

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PREFACE

The Model Trading Partner Agreement, along with its section-by-section commentary, were prepared by the Electronic Messaging Services Task Force to furnish a tool for counsel whose clients are integrating electronic data interchange into their contracting procedures. The Report of the Electronic Messaging Services Task Force, to which the Agreement is appended, details the commercial practices which are evolving as the use of electronic data interchange increasingly becomes common and describes the Task Force's study of those practices and the preparation of the Model Trading Partner Agreement and Commentary. In addition the Report analyzes the implications of these practices for commercial law and offers suggestions for resolving the issues in light of existing law, as well as an agenda for future study. It and the Model Agreement offer a format and framework for counsel and parties seeking a workable, practical approach to existing problems. The Task Force describes its Report as "a first step" and recommends "the development of an ongoing comprehensive strategy to accomplish appropriate legal reform."

The Model Trading Partner Agreement and Report which follow are the product of extended study and debate over a period of years, work which engaged all of the members of the Task Force. The members of the Task Force conducted an intensive study of the commercial practices pursued by companies which currently use electronic data interchange and solicited helpful comments from a broad spectrum of interests at all stages of the work. The Model Trading Partner Agreement, with its accompanying Commentary, is designed as a framework which counsel may adapt to the needs of clients establishing trading relationships in an electronic setting. Since it is the first such model to be made available for domestic contracts, it already has generated a high degree of interest from a wide variety of people interested in electronic data interchange, both at the domestic and at the international level.

In the preparation of the comprehensive Report, Jeffrey B. Ritter acted as reporter for the Task Force; he and Amelia H. Boss had primary responsibility for the drafting of the Report. The Report is the product of a substantial effort which analyzes the interaction of existing law with emerging commercial contracting practices. It includes an analysis and exploration of the broader implications of technologically-driven changes in business practices. The Report and Model Agreement will serve as an important guide for practitioners and courts alike in resolving these issues until such time as the law becomes clearer, through judicial development, revision of the law or both. The Report and Model Agreement represent another step in the continuing effort to ensure that commercial law permits the continued expansion of commercial practices.

Patricia Brumfield Fry, Chair
Subcommittee on Electronic Commercial Practices

Amelia H. Boss, Chair
Subcommittee on Scope of the Uniform Commercial Code

Fred H. Miller, Chair
Committee on the Uniform Commercial Code

NOTE: The opinions and conclusions expressed in the Report and Model Agreement were not submitted to any body for approval. The Report and Model Agreement do not necessarily reflect the opinions of the Subcommittee on Scope of the Uniform Commercial Code, the Subcommittee on Electronic Commercial Practices, Committee on the Uniform Commercial Code, the Section of Business Law or the American Bar Association.

THE COMMERCIAL USE OF ELECTRONIC DATA INTERCHANGE – A REPORT

Prepared by the Electronic Messaging Services Task Force[*]

I. INTRODUCTION

Electronic data interchange ("EDI") is the method by which business data may be communicated electronically between computers in standardized formats (such as purchase orders, invoices, shipping notices and remittance advices) in substitution for conventional paper documents.[1] The integration of EDI into ongoing business activities has occurred, and is expected to continue, at a considerable rate.[2] Over time, EDI will likely become the predominant method of sales contracting. The commercial implementation of EDI has introduced, by virtue of its functions and features, fundamental changes in the manner in which contracts for the sale of goods are made and performed.[3] This Report presents an analysis of existing commercial practices relating to EDI and the ability of certain current legal structures to accommodate those commercial practices.[4]

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[*] The members of the Task Force involved in the work described in this Report were Michael S. Baum (chair), Professor Amelia H. Boss, Thomas J. McCarthy, Philip V. Otero and Jeffrey B. Ritter. The additional contributions of Professor Fred H. Miller, Professor Patricia Brumfield Fry, Professor Douglas J. Whaley, Ralph M. Savage, Harry R. Weiss (Temple University School of Law Class of 1990), and Dean M. Lenzotti and Julia S. Kennedy (The Ohio State University College of Law Class of 1990) are gratefully appreciated. The Task Force wishes to recognize the firm of Schwartz, Kelm, Warren & Rubenstein for its support. The Task Force also wishes to acknowledge the assistance of Mead Data Central as well as the contributions of others, too numerous to mention, who evaluated and made comments on the efforts of the Task Force.

[1] Technically stated, EDI is the transmission, in a standard syntax, of unambiguous information between computers of independent organizations. ACCREDITED STANDARDS COMM. X12, INFORMATION MANUAL 2 (1989). Additional technical information regarding EDI may be found in ACCREDITED STANDARDS COMM. X12, AN INTRODUCTION TO ELECTRONIC DATA INTERCHANGE (1988) [hereinafter EDI INTRODUCTION] (this and other publications of Accredited Standards Committee X12 are available from the Data Interchange Standards Association, Alexandria, Virginia) and in ELECTRONIC MESSAGING 27-28 (ABA Publ. No. 507-0210, 1988). *Electronic Messaging* was the first work of the Electronic Messaging Services Task Force to consider the legal aspects of EDI and other electronic messaging practices. *See infra* note 13.

There are two principal conclusions of this Report. First, in evaluating the commercial practices which result from the use of EDI, existing rules in the Uniform Commercial Code (the "Code" or "U.C.C.")[5] and at common law regarding the process of contract formation,[6] the validity of contracts,[7] and the method for determining the terms and conditions of any contract[8] prove inadequate for assuring the legal enforceability of contracts for the sale of goods formed with the use of electronic media. Second, until appropriate statutory revisions are adopted to fully accommodate electronic commercial practices, an important strategy for assuring the validity and predictability of the related commercial transactions is the implementation of an agreement between EDI participants containing certain uniform provisions. The Model Electronic Data Interchange Trading Partner Agreement (the "Model Agreement"), prepared by the Electronic Messaging Services Task Force (the "Task Force"), is a suggested format in which those provisions may be structured.[9]

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[2] Predictions for the EDI industry are very positive, particularly in the retail industry where it is estimated that 27% of the smallest retailers and 77% of the largest retailers will be using EDI by 1991. Davis, *Retailers Go Shopping for EDI*, DATAMATION, Mar. 1, 1989, at 53. On an industry-wide basis, predictions are that the number of companies using EDI will double by 1993, with about 70% of all companies using EDI by the year 2000. Taft, *EDI Technology Eases Data Translation Process*, GOVERNMENT COMPUTER NEWS, July 22, 1988, at 51. The number of orders transmitted by EDI is expected to grow from 22% in 1987 to 55% by 1995. Reisman, *EDI Clearing New Paths for Distribution*, COMPUTER & SOFTWARE NEWS, May 23, 1988, at 61. In one study, 39% of companies with over $500 million in sales who have not made a commitment to EDI plan to make a commitment in the near future. VOLUNTARY INTERINDUSTRY COMMUNICATIONS STANDARDS COMM. & ARTHUR YOUNG, A STUDY OF CURRENT AND FUTURE UTILIZATION OF SCANNING TECHNOLOGY AND ELECTRONIC DATA INTERCHANGE AMONG U.S. RETAILERS 14 (July 1988).

[3] The practical benefits of EDI include reduction in paper handling and storage requirements, reduction in data entry error (as well as eliminating the need for repeated entry of comparable data), reduction in administrative and processing expenses and reduction in the inventory levels which must be maintained. The last benefit is a consequence of the ability to more accurately project and identify demands upon inventory, thereby eliminating excess inventory maintained "just in case."

[4] A discussion of the background of this Report and the events which led to its completion is presented *infra* Part II.

[5] All references to the Uniform Commercial Code contained in this Report, unless otherwise noted, are to the 1987 Official Text and Comments [hereinafter U.C.C.].

II. HISTORY OF THE REPORT

Electronic data interchange emerged as a developing technology in the early 1970's. EDI is a means by which data can be communicated electronically between businesses.[10] A significant distinguishing characteristic of EDI is that the information being communicated is structured into standard formats, permitting effective, comprehensible data exchanges irrespective of the particular hardware or software implemented at either end of the transmission by the communicating parties.

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[6] *See infra* Part VI.A.

[7] *See infra* Part VI.B.

[8] *See infra* Part VI.C.

[9] The Model Agreement, together with a Commentary, appears at 44 BUS. LAW. __ (1990) [hereinafter MODEL AGREEMENT]. Certain portions of this Report have been incorporated in the Commentary in order to assure the utility of the Commentary to counsel independent of this Report.

Some of the findings and conclusions in this Report were initially set forth in a paper by one of the authors, a member of the Task Force, submitted to the Study Committee on Revision of Article 2 established by the Permanent Editorial Board for the Uniform Commercial Code. Ritter, *Electronic Data Interchange--A Progress Report to the Study Committee on Revision of Article 2* (1989) (unpublished manuscript).

In 1985, the American Bar Association's Committee on the Uniform Commercial Code organized the Ad Hoc Subcommittee on Scope of the U.C.C. (the "Ad Hoc Subcommittee"). A principal focus of the Ad Hoc Subcommittee was to consider issues relating to the use of computers in modern commercial transactions.[11] In 1987, the Ad Hoc Subcommittee organized the Electronic Messaging Services Task Force (the "Task Force"). The Task Force was requested to consider the impact of electronic messaging technologies on the formation and enforcement of contracts and related issues.[12] In early 1988, the Task Force initiated a broad study of electronic messaging systems, including EDI, with the following objectives: (a) to determine what legal concerns existed impeding a full scale implementation of EDI in commercial contracting and the manner in which businesses attempted to address such concerns; (b) to identify possible legal solutions, including recommendations to appropriate organizations for statutory revision; and (c) to provide information and resources to attorneys preparing agreements implementing electronic messaging systems in commercial practice. In late 1988, the Task Force delivered to the Ad Hoc Subcommittee an initial report, entitled *Electronic Messaging*.[13]

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[10] Generally, EDI communications between businesses occur over telephone lines or satellite networks, although the information may be manually delivered on magnetic tapes or disks. Other uses of electronic messaging systems in business include telex, facsimile machines and electronic mail (which generally involve transmissions in non-standardized formats). A comparison of the distinctions between various electronic messaging systems is contained in ELECTRONIC MESSAGING, *supra* note 1, at 27-28. *See also infra* text accompanying notes 164-168.

[11] *See* BUS. LAW. UPDATE, Nov./Dec. 1985, at 7.

[12] ELECTRONIC MESSAGING, *supra* note 1, at 4.

As the Task Force was drafting *Electronic Messaging*, the Ad Hoc Subcommittee authorized a more specific examination of the commercial implementation of EDI and the possible development of uniform approaches for resolving the concerns relating to the legal efficacy of the resulting commercial transactions (the "Study"). In July 1989, in recognition of the continued expansion of electronic commercial practices (including the use of EDI) and the appropriateness for an ongoing legal analysis of those activities, the Committee on the U.C.C. organized a new Subcommittee on Electronic Commercial Practices[14] and converted the Ad Hoc Subcommittee into a standing Subcommittee on the Scope of the U.C.C..[15] The Study has been completed under the joint sponsorship of the two Subcommittees. With this Report, the Task Force's work is concluded; future activity in the area of electronic messaging services, EDI and related projects will be conducted by the Subcommittee on Electronic Commercial Practices.[16]

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[13] ELECTRONIC MESSAGING, *supra* note 1. *Electronic Messaging* provides an overview of the implementation of electronic messaging systems in commerce, with specific discussion of the issues of contract formation, the impact of emerging technologies and the role of the electronic messaging industry and its users in addressing the legal concerns identified in its findings. This Report does not attempt to re-visit the analysis contained in *Electronic Messaging*; rather, this Report, in part, reflects and confirms the general findings expressed in *Electronic Messaging* with specific regard to EDI commercial practices.

[14] A full discussion of the purposes and activities of the Subcommittee on Electronic Commercial Practices may be found in BUS. LAW. UPDATE, ________, 1990, at __.

[15] The Subcommittee on the Scope of the U.C.C. will continue work in areas relating to computer software contracting, the delivery of computer services and related concerns, and will continue to explore other issues concerning the scope of the U.C.C. as they arise. *See* Letter from Amelia H. Boss and Patricia B. Fry to members of the Ad Hoc Subcommittee (July 1989).

The Study was initiated by a series of inquiries, addressed to companies (and their counsel) recognized as participants in the EDI industry, requesting copies of current EDI agreements then in use.[17] Members of the Ad Hoc Subcommittee also solicited their clients and other counsel experienced with electronic messaging systems and EDI transactions to obtain additional agreements, as well as to engage in discussions and secure commentary on the related issues. The Study was received with a high level of interest by participants within the EDI community and the continued research of the Task Force was supported by the cooperation of many industry participants.[18] During the course of the Study, computer industry trade journals and other publications also focused attention upon the legal considerations relating to EDI commercial practices.[19]

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[16] The Study identified a number of areas of legal concerns relating to EDI which were determined to be outside the practical scope of the Study and were not addressed by the work of the Task Force in preparing this Report. These areas include the commercial implementation of EDI in international transactions, agreements with third-party service providers (*see infra* Part VII.B.), electronic letters of credit (and supporting documentation) (*but see infra* notes 68 & 182) and the development of supplemental contractual provisions relating to electronic payments and electronic fund transfers (*see infra* note 68). Certain of these topics are now being addressed by the Subcommittee on Electronic Commercial Practices. *See* BUS. LAW. UPDATE, *supra* note 14, at _. *See also infra* Part VIII.B.

The foregoing areas are to be distinguished from topics addressed in agreements included in the Study by certain types of provisions which were not reflected, for a variety of reasons, in the Model Agreement. *See infra* Part VII.G.

[17] *See* Letter from Amelia H. Boss and Michael S. Baum to EDI industry participants (Feb. 3, 1988). The request was broad in scope, seeking agreements relating to "user, trading, service and provider agreement(s)." *Id.* Later, however, the Study limited its analysis to those agreements addressing domestic commercial trading practices.

In early 1989, the participating members of the Task Force determined, based upon the agreements reviewed and their initial findings, that a model agreement, to be executed between trading partners[20] using EDI, would be an appropriate final product.[21] Working drafts of the Model Agreement were circulated at the March 1989 and May 1989 meetings of the Accredited Standards Committee X12, which operates under the procedures of the American National

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[18] Special recognition is appropriate of the efforts of the following individuals and businesses who provided substantial assistance to the Task Force: Mark J. Reed (E.I. DuPont de Nemours & Co.), Phyllis Sokol and David Dodge (Sterling Software, Inc., Ordernet Services Division), Ralph M. Savage, Esq. (General Electric Co.), Robert M. Bigelow, Esq. and the companies who submitted agreements for review by the Task Force. *See also infra* text accompanying notes 22 & 24.

[19] *See, e.g.*, Bequai, *EDI Technology Sounds Easy; May Flunk Legal Test*, DIGITAL REV., May 22, 1989, at 47 (1989); Brown, *VANs Tell Users of EDI Legal Problems; Conflicts Could Arise Because Current Trade Laws Do Not Cover Electronic Business Transactions*, NETWORK WORLD, May 1, 1989, at 11; Bush, *Lawyers Advise Building Legal Protection Into EDI Networks*, DATA COMM., Oct. 1988, at 54. Additional recent publications considering the legal aspects of EDI (which were not available during the course of the Study); include Baum, *Electronic Contracting in the U.S.*, in EDI AND THE LAW 117-74 (1989), Wright, *EDI and American Law: A Practical Guide* (TDCC: The Electronic Data Interchange Association, 1989).

[20] The term "trading partner" is used within the EDI industry to identify the buyer and the seller in commercial transactions.

[21] To a significant degree, the EDI community itself generated the need for a model agreement. Consistently, consultants, auditors and service providers were encouraging those companies implementing EDI to consult with legal counsel in establishing new commercial relationships (or introducing electronic elements to existing relationships). No further guidance or direction was available, however, as to the nature of the legal concerns appropriate for consideration or possible practical strategies for addressing those issues.

Standards Institute ("ASC X12").[22] Through a series of sessions at which the working drafts were reviewed, various ASC X12 members, including participating companies, EDI service providers,[23] banks and other financial institutions, and the attorneys, auditors and accountants for those organizations, provided comments and reactions to suggested provisions and approaches. These comments also helped to define and refine remaining research efforts of the Study.[24]

Working drafts of the Model Agreement and a preliminary version of this Report were also distributed for review to, and comments were received from, the members of the Ad Hoc Subcommittee and the

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[22] The American National Standards Institute coordinates America's voluntary standard system. In 1979, it chartered ASC X12 to develop uniform standards for inter-industry electronic interchange of business transactions. The objective of ASC X12 is to develop standards relating to order placement and processing, shipment and receiving information, invoicing, payment and cash application data. EDI INTRODUCTION, *supra* note 1.

Standards developed by ASC X12, while increasingly used, are not the exclusive standards by which data may be formatted for purposes of electronic interchange. Other organizations have developed sets of standards. For example, TDCC: The Electronic Data Interchange Association was responsible for the early development of many standards still used in the transportation services industry. At the international level, the United Nations sponsors the United Nations Electronic Data Interchange for Administration, Commerce and Transport ("EDIFACT") which has assumed responsibility for the development of global interchange standards. ASC X12 and EDIFACT have comparable functions and objectives. In addition to these public standards, a substantial array of unique, proprietary formats have been developed. Indeed, the development of standard formats responds to the absence of uniformity among proprietary formats which inhibited the efficient inter-company expansion of EDI.

[23] For a discussion of the role of service providers in EDI commercial transactions, *see infra* Part VII.B. *See also* MODEL AGREEMENT, Section 1.2 & Comments.

[24] Responses from the ASC X12 community were especially productive in identifying some of the non-legal challenges to developing EDI trading partner relationships. As a result of this input, the Model Agreement contains several provisions (in particular, the elements of Section 1 and the Appendix) which are intended to facilitate the practical implementation of electronic commercial relationships in a manner consistent with current (and anticipated) business practices. *See also* MODEL AGREEMENT, Recitals Comment 1.

Committee on the U.C.C. at meetings held, respectively, in March and August 1989. A final draft of the Model Agreement, integrated with the Commentary, was presented at the ASC X12 meeting held in October 1989.[25]

III. STRUCTURE OF THE REPORT

This Report, together with the Model Agreement and Commentary, is intended to perform several functions and achieve several purposes. Although presented with the Report as an integrated product, the Task Force prepared the Model Agreement and Commentary to be self-sufficient as a tool for attorneys asked to prepare definitive agreements governing the use of EDI in commercial transactions.[26] The format of the Model Agreement and Commentary helps identify the issues arising in EDI commercial transactions and suggests uniform approaches in response.[27] The functions and purposes of the Report, therefore, are threefold.

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[25] This summary of the history of the Model Agreement and Commentary does not reflect the efforts of the individual members of the Task Force in 1988-89. During that period, eleven working sessions were held in various cities, several of which extended for more than one day. In addition, countless phone calls, letters, memoranda and working drafts were exchanged in the intervals between the working sessions.

[26] The Model Agreement represents, to the knowledge of the Task Force, the first model agreement developed in the United States relating to the use of EDI. During the course of the Study, the Task Force also obtained a proposed Standard Interchange Agreement prepared by the Legal Advisory Group of the EDI Association of the United Kingdom. Letter from the EDI Association (Mar. 9, 1989). That form of agreement takes into account the Uniform Rules of Conduct for Interchange of Trade Data by Teletransmission ("UNCID") adopted by the International Chamber of Commerce (available for $10.25 from ICC Publishing Corp., 156 5th Ave., New York, N.Y. 10010).

The Subcommittee on Electronic Commercial Practices is continuing to monitor the developing use of EDI with respect to international commercial law, including the applicability of the United Nations Convention on Contracts for the International Sale of Goods (Final Act (Apr. 10, 1980), U.N. Doc. A/CONF.97/19, U.N. Pub. E.8.IV.3, *reprinted in* 19 INT'L LEGAL MATERIALS 668-99 (1980) [hereinafter CISG]) to electronic transactions as well as the adaptability of Principles for International Commercial Contracts under development by the International Institute for the Unification of Private Law ("Unidroit"). *See infra* Part VIII.B.

First, it provides an analysis of existing commercial practices with regard to EDI, as those practices were reflected by agreements between trading partners, as well as by the additional inquiries and activity which constituted a part of the Study. This analysis is integrated throughout the Report. Under *General Observations on the Study*, the Report sets forth the conclusions of the Study on the general state of affairs regarding the use of EDI in commerce, beginning with an example of a typical EDI transaction. The general conclusions provided the basis from which several of the drafting principles adopted by the Task Force in constructing the Model Agreement were formulated; these drafting principles are identified under *Drafting the Model Agreement*.

Second, it reviews the particular legal concerns arising with regard to EDI commercial practices, and discusses the manner in which the Model Agreement attempts to address those concerns. This review and discussion appears under *The Legal Issues*. With regard to each of the central legal issues included in the Report's analysis, the Task Force has attempted to focus upon the results of the Study regarding related existing EDI commercial practices, explain the function of appropriate sections of the Model Agreement, and discuss the effect of those provisions under the U.C.C. as well as other applicable law. Specific attention is given to the decision-making process by which the Task Force constructed certain of the provisions of the Model Agreement, with the hope that such discourse will assist counsel in practice and those subsequently asked to interpret the function of the Model Agreement in particular circumstances. The Model Agreement also provides a framework by which the additional decisions significant to establishing EDI as an effective and reliable means of communication may be addressed. This discussion, under *The Commercial Issues*, includes analysis of the capabilities of the technology and the provisions of the Model Agreement, taken together, to realize the business purposes for which EDI is implemented. This section of the Report concludes with a summary of the topics which were not addressed in the Model Agreement and which counsel may wish to consider including in agreements prepared for particular transactions.

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[27] Many formats exist in which uniform approaches may be presented, and any definitive agreement considering the underlying business relationships may contain provisions not reflected by the Model Agreement. The Model Agreement presents only an example of the manner in which the various issues may be addressed by parties implementing EDI. The Foreward contains the following cautionary language:

> Those reviewing the Model Agreement and Commentary are strongly encouraged to consider and study their provisions and to use independent judgment as to the effectiveness of the provisions of the Model Agreement and the advisability of their use in particular transactions.
>
> *The Model Agreement and Commentary reflect the views of those involved in their preparation; neither the contents of the Model Agreement and Commentary, nor the opinions expressed therein, represent the views, in whole or in part, of the American Bar Association or any part thereof.*

MODEL AGREEMENT, Foreward (emphasis in original). *See also infra* Part VII.G.

Finally, the Report identifies, under *Future Legal Developments*, optional uses, with modifications, of the Model Agreement (other than in connection with sales of goods under Article 2 of the Code), as well as additional topics for further inquiry which were not effectively addressed in the Study. The Model Agreement, when compared to the breadth of emerging electronic commercial practices, represents a conservative first step. The scope and purposes of the Model Agreement may be summarized as follows: (a) the Model Agreement is to be used between commercial trading partners -- the Model Agreement is not intended for use in consumer transactions; (b) the Model Agreement is to be used only in connection with the domestic purchase and sales transactions involving goods, as contemplated by Article 2 of the U.C.C.; and (c) the Model Agreement is intended to facilitate the commercial relationship of the parties. The Model Agreement seeks to preserve freedom of contract and does not generally advocate particular solutions to what are essentially business issues. The Task Force did not consider the Model Agreement in and of itself a complete product, and proceeded to develop the Commentary to achieve the following purposes: (a) to provide background information relating to certain technical aspects of EDI and prevailing general industry practices; (b) to explain how the Model Agreement works, the purposes of each section and the intended effect of certain provisions in the context of existing commercial law; and (c) to provide specific drafting considerations on the manner in which provisions of the Model Agreement may be utilized or modified in preparing a definitive agreement.[28]

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[28] *See* MODEL AGREEMENT, Foreward and Recitals, Comment 1. The interlineation of the Commentary within the provisions of the Model Agreement is intentional. The Task Force wished to discourage the easy duplication of the Model Agreement and to encourage a careful review by counsel of its provisions as well as the legal discussion and drafting considerations contained in the Commentary.

IV. GENERAL OBSERVATIONS ON THE STUDY

An example best illustrates the manner in which EDI frequently is implemented to effect commercial sales transactions.

ABC and XYZ have a long-standing purchase and sale relationship. Recognizing the economic and administrative benefits attributed to EDI, ABC announces to its vendors, including XYZ, that ABC will require, or provide incentives for, the use of EDI in future transactions. ABC engages a third party service provider (referred to in the Model Agreement as a "Provider"[29]) to receive, transmit and sort the various EDI transmissions of ABC. In addition, ABC determines which paper-based documents will be replaced by EDI formats, as well as which industry standards will be adopted around which all transmissions will be structured, and implements certain security procedures for assuring the authenticity and integrity of the electronic communications. All of this information is communicated to ABC's vendors, one of which is XYZ, who must implement EDI accordingly to keep ABC's business (or obtain the available incentives, as the case may be).

A sales transaction is initiated by the electronic transmission from ABC (as buyer) of a purchase order which sets forth, in the sequence specified by the selected standard, the elements of information typically included in any purchase order (such as ABC's name, shipping information, quantity, style, color, price, freight, taxes and required date of delivery).[30] The purchase order is included within an electronic "envelope" which may contain other messages to XYZ relating to other transactions. The purchase order is initially sent to ABC's Provider, who, in turn, stores and subsequently transmits the purchase order, together with any other electronic "documents" within the envelope, to XYZ. Upon receipt of the purchase order, XYZ transmits a message in return (called a functional acknowledgement[31]), which verifies that no syntactical errors have occurred in the transmission of the purchase order (*i.e.*, the data was complete and in the correct format). Upon reviewing the terms set forth in the purchase order and determining their acceptability, XYZ electronically transmits an additional transmission to ABC, which confirms acceptance of those terms; such transmission may be, for example, a purchase order acknowledgement or a shipping notice. Upon receipt of XYZ's purchase order acknowledgement, ABC in turn sends a functional acknowledgement back to XYZ.[32] All transmissions from XYZ are sent to the Provider designated by ABC (with whom XYZ also has contracted[33]), which stores and transmits XYZ's messages to ABC at pre-arranged times (or permits ABC to access electronically the Provider's appropriate files and have such messages transferred to ABC's computer).

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[29] ABC may also engage more than one Provider, thereby allowing its trading partners a selection, or develop its own communications facilities for EDI activity rather than engaging Providers.

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[30] However, an EDI purchase order does not generally include "back-side" terms and conditions. *See infra* Part VI.C.

[31] For further discussion of functional acknowledgements, see *infra* Part VI.A.1.

[32] *See infra* note 101.

[33] *See supra* note 29. XYZ may also contract with its own Provider who, in turn, exchanges transmission with ABC's Provider.

Following formation of the contract, additional commercial messages may be communicated electronically between ABC and XYZ. These documents may include change orders, invoices, remittance advices and similar types of communications. Generally, a Provider will enter into written agreements with ABC and XYZ which may also provide for certain value-added services, in addition to the transmission, storage and receipt of EDI documents.

In a fully automated EDI environment, trading partners have developed applications software programs which eliminate human decision making with respect to particular transactions. For example, in the event that reported inventory reaches a certain level, ABC's computer might automatically generate an appropriate purchase order, including terms as to price, quantity and similar items pre-defined to be within the parameters of the business relationship with XYZ. Similarly, XYZ's computer may be programmed to automatically accept any purchase order whose terms fall within predefined parameters. This process may be sufficient, if fully established, to permit ordering, shipping, invoicing and payment to occur electronically with human review and intervention, if it occurs at all, limited to supervisory summaries of daily activity.

The Study clearly established that trading partners mutually intend for the electronic interchange of data to give rise to contracts which are as valid and binding as those formed by the exchange of conventional paper documents.[34] Whether the underlying commercial transaction represents a release against a pre-existing purchase agreement,[35] or a more periodic transaction not referenced by a master relationship, trading partners intend to do business. Motivated by the potential savings and economies of scale to be realized by the use of EDI, businesses have moved forward with the technology on the assumption, at the business level, that the underlying commercial relationships were not being altered.[36]

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[34] The Model Agreement reflects the commitment of trading partners to assuring that the use of the technology does not render their purchase and sale transactions legally invalid or unenforceable. *See* MODEL AGREEMENT, Recitals & Comment 3; Section 3.3.1 & Comment 2. *See also infra* Part VI.B.

One of the objectives of the Study was to determine to what extent those implementing EDI were executing written agreements governing its use. The Study identified a significant fact: most EDI activity occurs in the absence of any written agreement between the trading partners regarding the terms and conditions applicable to commercial use of EDI. For example, one multi-national EDI participant, actively using EDI both as a buyer and as a seller, had executed written agreements with less than 10% of all of its trading partners; nevertheless, management considered the implementation of EDI to be a significant success and strongly endorsed its continued expansion. Many companies have not included written agreements with their trading partners as an item on their implementation checklists, notwithstanding the fact that many Providers and consultants strongly encouraged those agreements in their own implementation guides, public seminars and private consulting activity. The findings of this Report regarding existing EDI agreements must be evaluated against the fact that most EDI activity currently occurs in the absence of any such agreements.

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[35] An informal survey conducted as a part of the Study suggested that a substantial portion of early EDI implementation has been to facilitate ongoing requirement or output purchasing arrangements. EDI participants anticipate that an increasing percentage of all EDI transactions will be in support of these types of arrangements. EDI is, of course, especially well-adapted to "just-in-time" and "quick response" manufacturing and distribution practices.

[36] The Study revealed that the initial impetus for EDI originated from very large corporations with vendor portfolios of hundreds or thousands of vendors. The purchasing corporation has, in effect, mandated EDI use as a condition to continued business. *See In re* Groseth International, Inc., 442 N.W.2d 229 (S.D. 1989) (a franchisee's failure to install an electronic ordering system connected to the franchisor was good cause for termination of the franchise). The costs of implementation are not necessarily onerous. In one case, nearly 100 vendors were converted to EDI at an average cost of $3,500-$4,000, which, in several instances, included the purchase of the first computer used in the vendor's business. In addition, many companies provide economic incentives to their vendors for adopting EDI.

A variety of reasons can be identified for the failure of EDI participants to adopt written EDI agreements. First, within corporate environments, those initially implementing EDI are often separated from the levels of management who more commonly interact with attorneys, whether as corporate or outside counsel. Accordingly, the initial use of EDI often occurred quietly, and its subsequent practical success diminished concerns about the legal validity of the underlying transactions.[37] Second, there has existed a dearth of information regarding the legal implications of EDI. Finally, although not explicitly identified by any participant in the Study, even those with an understanding of the related concerns and issues might reasonably conclude that the value of any individual transaction completed with the use of EDI did not justify the administrative and out-of-pocket costs of planning, developing, negotiating and executing separate agreements with one's trading partners.[38]

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[37] EDI also is often initiated with one's most loyal or trusted trading partners with whom the relationship outweighs concerns for "legal formalities."

[38] In contrast, the trading partners of that company, which are often smaller companies for whom the relationship with the large company may be an important component of their business, might be the most enthusiastic for a written agreement. The Model Agreement exists, in part, to provide a tool of equal utility to all EDI users, irrespective of their comparative economic leverage.

An interesting factor identified by the Study was the not infrequent use of paper documents to confirm the content of EDI transmissions. This practice is generally adopted by mid-to-small size companies implementing EDI, but not by the largest EDI participants. In many instances, the requirement for confirming paper documents arose from the existence of an incomplete electronic system for processing commercial transactions, rather than as a response to any concern regarding EDI reliability or accuracy. Many EDI users simply had not converted all of their operations (*e.g.*, purchasing, shipping and payables) in order to fully eliminate the paper trail. The paper copies were often used in those areas of the business which had not yet been converted. The Task Force concluded, because the use of paper trails diminishes the benefits to be derived from EDI, that the Model Agreement should assume no paper trail duplicating EDI activity was to be maintained.[39]

The most significant characteristic of the agreements reviewed in the Study was the variety in their terms, length and sophistication.[40] This diversity can best be attributed to two factors. First, the absence or brevity of particular provisions reflected a conscious business judgment to accept a certain level of risk with regard to the underlying issues. Second, and perhaps the better explanation in many instances, there existed an unfamiliarity with the full range of issues arising in connection with the use of EDI that may be appropriately addressed by an agreement. The shortest agreement consisted of a single sentence typed on the front of a standard purchase order form; the longest contractual arrangement was integrated into an "EDI implementation manual" contained within a three-ring binder provided to each vendor. The Task Force concluded that the execution of an agreement similar to the Model Agreement and the performance of the sales transactions contemplated thereby, together with the additional conduct of the parties in accordance with the terms of such agreement, would be invaluable in establishing the existence of valid contracts for the sale of goods.[41]

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[39] The addition of "paper-trail" procedures can be easily implemented by counsel utilizing the Model Agreement. However, the use of such procedures was declining during the course of the Study, and is expected to continue to decline in the future as the implementation of EDI throughout an entire corporate culture becomes an easier task to accomplish. Accordingly, such a "paper-trail" provision may possibly impair the long-term objectives of EDI.

[40] Approximately 40 actual agreements were submitted to the Task Force for review. In addition, informal conversations with others familiar with EDI transactions provided a basis for certain of the findings in this Report. No attempt has been made to quantitatively analyze the content of the various agreements which were reviewed. Rather, the Study focused on the substantive components of the agreements and the general trends in the treatment of particular legal and business concerns. Most agreements were submitted to the Task Force on a confidential basis; accordingly, this Report does not identify the contributors.

V. DRAFTING THE MODEL AGREEMENT

To determine the proper denominator for the Model Agreement, the Task Force used two criteria in evaluating the agreements under review. First, the Task Force excluded as candidates for the Model Agreement those provisions which were unique to the contracting practices of particular trading partners, and which were not included within their agreements by virtue of conducting business electronically.[42] Second, provisions were excluded from consideration if, though related to electronic communication, the provisions were essentially informational regarding the nature of EDI or technical with regard to specific transmission instructions, security procedures or similar matters.[43] With those exclusions, the remaining provisions for consideration were significantly reduced.[44]

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[41] *See* U.C.C. § 2-204. *See also* MODEL AGREEMENT, Recitals, Comment 3.

The Model Agreement, in its final form, is relatively concise. With the exception of the Appendix, its provisions might be capable of reduction to a single page printed form.[45] In its brevity, however, the Model Agreement covers a large number of topics; its provisions have been designed to work together to better assure the validity of the related commercial relationship and ongoing sales transactions.[46] Curiously, with the exception of the Statute of

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[42] For example, if the agreement submitted for review also contained the general terms and conditions for purchase and sale transactions, such provisions were not relevant for the Model Agreement. *But see infra* Part VI.C.

[43] The Appendix preserves flexibility for trading partners to provide such information as a part of their agreement. *See infra* notes 45, 51, & 54. Additional discussion of excluded provisions may be found *infra* Part VII.G.

[44] Significant effort was then placed into resolving the manner in which the flexibility of the Model Agreement as a simple document could be preserved while still identifying or accommodating reasonable options. The topics of security procedures (Section 1.4), delivery and receipt (Sections 2.1 & 2.2) and confidentiality (Section 3.2) were restructured several times on that basis.

[45] For a discussion of the use of the Appendix, see MODEL AGREEMENT, Use of the Model Agreement and Commentary para. 3. The Task Force considered, but rejected, including a section of definitions in the Model Agreement; the few definitions that were determined to be essential to the Model Agreement are incorporated into its text. *See also infra* note 65.

[46] The manner in which the provisions work together is discussed in depth *infra* Parts VI & VII.

Frauds issue,[47] the agreements which were reviewed generally reflected no serious consideration of the applicability of other Code provisions or the possibility the implementation of electronic commercial practices might modify or alter the treatment of existing commercial relationships.

Although the contractual arrangements were diverse, the Study identified a consistency in the actual course of business decisions made by companies implementing EDI, irrespective of the comparative size or sophistication of the trading partners. In large part, the congruity in the courses of conduct was by necessity. Trading partners establishing an EDI relationship must make a series of decisions, primarily technical in nature, to create an effective and reliable method of communication. These decisions include: selecting the formats in which the data will be transmitted and the standards and possible implementation conventions and guidelines to be adopted in connection with such formats; the possible selection of Providers (as well as the various business decisions required in connection with establishing such relationship); and the development and maintenance of appropriate computer and communications systems and security procedures. The Task Force determined that these mutual decisions were strategically necessary to assuring the legal efficacy of the resulting commercial transactions; accordingly, the Model Agreement is structured to provide a framework for the parties to proceed through a decision-making process which will confirm their mutual intent to give legal significance to their EDI transmissions.[48]

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[47] *See infra* Part VI.B.1.

During the Study, continuing advances within the EDI industry were made to assimilate a larger scope of business activity and to improve the sophistication of EDI technologies. In addition to the development of standard formats for new types of electronic "documents,"[49] significant steps were made toward the increased security and reliability of transmission activities and of the records of the data being transmitted and received.[50] These types of changes can be expected to continue. As a result, the Study concluded that any model approach must maintain a level of flexibility in its provisions which would allow the parties to take advantage of technological advances to enhance the reliability of their respective systems without requiring renegotiation of their EDI agreement.[51]

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[48] *See* MODEL AGREEMENT, Sections 1, 2, 3.3.1 & Comments; *see also infra* text accompanying notes 190-193.

[49] As of September 15, 1989, ASC X12 had released standards for 29 transaction sets (i.e., an electronic document format; *see infra* note 233) and related standards; an additional 25 transaction sets were in development, being voted upon or prepared for publication, and 74 approved project proposals were pending. ASC X12 STANDARDS DEVELOPMENT AND MAINTENANCE ACTIVITIES: STATUS REPORT (Doc. No. ASC X12S/89-490, Sept. 15, 1989). At the international level, EDIFACT (*see supra* note 22) had succeeded in approving its initial standard (for commercial invoices) and had commenced work on approximately 55 additional messages. EDIFACT MESSAGE DEVELOPMENT STATUS SUMMARY (Sept. 1989). A more complete discussion of standards and transaction sets appears *infra* Part VII.A.1.

[50] *See* ACCREDITED STANDARDS COMM. X12, ASC X12 815 CRYPTOGRAPHIC SERVICE MESSAGE & ASC X12.58 SECURITY STRUCTURES (1989) (in development).

[51] For example, Section 1.4 of the Model Agreement imposes an obligation on each party to use security procedures "reasonably sufficient to ensure that all transmissions of Documents are authorized and to protect its business records and data from improper access." The Model Agreement therefore requires the parties to implement advances in security procedures which are reasonable in light of such factors as the size and relative sophistication of the parties, the complexity of their respective operations and the nature of their communications. *See* MODEL AGREEMENT, Section 1.4 Comments 4, 5. Additional examples of the flexibility afforded for change within the Model Agreement are found in the provisions of Sections 1.1 (additional

A third characteristic of the EDI agreements which were reviewed was the unilateral quality of many of the provisions. Much of the implementation for EDI has been from large businesses, confronted by the increasingly difficult administrative burden of maintaining higher volumes of paper, who often drafted agreements designed to favor their position on a number of contractual items.[52] The Task Force concluded, however, that any appropriate uniform approach must provide parity between the trading partners; therefore, the provisions of the Model Agreement are structured bilaterally. The Model Agreement, unless modified, permits each party to be a buyer and a seller; it also assumes equality in the bargaining power of the parties and attempts to allocate the responsibilities and burdens of the Model Agreement equally between the parties.[53] Recognizing commercial reality, the Model Agreement also preserves the flexibility for parties to reallocate such responsibilities and

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documents adopted by regular use), 1.3 (System Operations; *see* Comment 2 thereto), and 3.2 (use of separate confidentiality agreement). The Appendix is the vehicle by which the trading partners may effectively document changes in their relationship. The Appendix should be considered an essential component of the Model Agreement. *See supra* note 45.

[52] For example, in several instances, the mere receipt of an electronic purchase order was deemed to bind the receiving party to perform in accordance with its terms, the costs of electronic transmissions were required to be absorbed by the smaller party and particular security procedures were required, especially with respect to the use of passwords and encryption keys. *See infra* Parts VI.A.2, VII.C & VII.D.

[53] In this regard, particular attention should be focused on the following provisions: MODEL AGREEMENT, Recitals & Drafting Consideration 1; Sections 1.2.2 (allocation of Provider costs), 1.2.3 (allocation of liabilities arising out of acts or omissions of Providers), 1.4 (security procedures), 3.1 (Terms and Conditions), 4.6 (Limitation of Damages), 4.7 (Arbitration).

burdens, by permitting alternate language in the Appendix without altering the basic text of the Model Agreement.[54]

In two instances, dealing with confidentiality (Section 3.2) and arbitration (Section 4.7), the Task Force determined that the Appendix would be comparatively ineffective as a method of modifying the standard terms of the Model Agreement. Although each of these provisions deserves consideration,[55] the Task Force determined it appropriate, in large part due to the likely complexity and varying sophistication of such provisions, to defer to counsel to structure alternatives to the Model Agreement, if desired.[56]

The Task Force concluded that the use of an agreement defining the parameters of an EDI commercial relationship was consistent with two of the fundamental purposes of the Code, namely (a) to simplify, clarify and modernize the law governing commercial transactions, and (b) to permit the continued expansion of commercial practices through custom, usage, and agreement of the parties.[57] The Code confirms the importance of freedom of contract: parties are free to vary by agreement the effect of provisions of the Code, except to the extent the general obligations of good faith, diligence, reasonableness and care may not be displaced.[58] The Model Agreement capitalizes upon the flexibility of the Code to permit its principles to be developed in light of unforeseen and new circumstances and practices,[59] and certain provisions effectively vary the application of provisions of Article 2 of the Code.[60]

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[54] The Appendix is particularly useful with regard to the allocation of Provider costs (relating to MODEL AGREEMENT, Section 1.2.2), security procedures (relating to Section 1.4), the identification of existing purchasing arrangements pursuant to which the provisions of the Model Agreement are to be incorporated (relating to Section 3.1) and the establishment of particular terms and conditions (relating to Section 3.1[A] or [B]). The scope of the Appendix was considered by the Task Force at length. The view was expressed that the Model Agreement should be limited exclusively to issues of liability, enforceability and the like, with the type of items addressed by the Appendix (which may be revised from time to time) appropriate to be considered in an implementation manual or guide developed between the trading partners outside the scope of the Model Agreement. However, the Task Force determined that the decisions reflected by the content of the Appendix are commercially significant and appropriately addressed within the Model Agreement; the Appendix permits periodic revisions to occur without renegotiation of the primary provisions of the Model Agreement. *See infra* Part VII.

[55] *See infra* Parts VI.B. & VII.E.

[56] *See also* MODEL AGREEMENT, Section 3.1; *infra* Part VI.C. Although presented as a suggested format, the Model Agreement strongly encourages freedom of contract. *See* MODEL AGREEMENT, Recitals Comment 1. Certain provisions of the Model Agreement, set forth by brackets, are presented as options for counsel to consider; in several cases, the bracketed language represents alternatives presented within the Model Agreement (*see, e.g.*, MODEL AGREEMENT, Sections 1.1 (regarding published industry guidelines) and 3.1 (regarding terms and conditions)), while in other instances provisions are themselves presented as optional (*see, e.g.*, MODEL AGREEMENT, Sections 1.2.3 (regarding liability for service providers) and 4.7 (regarding arbitration)).

The Model Agreement does not attempt to resolve all aspects of commercial trading relationships which are within the scope of Article 2. The Commentary cautions counsel to consider additional issues arising in connection with the underlying sales transactions.[61] Particular attention is directed, for example, to the possible classification of trading partners as merchants under the Code,[62] the impact of existing industry conventions and guidelines for EDI implementation as a usage of trade to be considered in any interpretation of the Agreement[63] and the effect of an EDI shipping notice as an acceptance.[64]

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[57] *See* U.C.C. § 1-102(2). *See also* MODEL AGREEMENT, Recitals, Comment 2.

[58] *See* U.C.C. § 1-102(3) & Official Comments 2, 3.

[59] *See id.* § 1-102 Official Comment 1.

[60] *See, e.g.*, MODEL AGREEMENT, Sections 1.5, 2.1, 2.3, 3.3.2.

[61] *See id.*, Recitals, Comment 1.

[62] *See id.*, Recitals, Drafting Consideration 2.

Finally, in reviewing the agreements included in the Study, the Task Force observed that most participants within the EDI community, perhaps because of their familiarity with the technical terms, easily substituted the EDI-specific terminology for more traditional terms used in conventional sales agreements. The Task Force concluded that, while such technical language might be understood by those in the industry, it had less meaning to attorneys, judges and business people for whom the EDI transaction was merely a means to an end. The Task Force determined that, if the Model Agreement (as implemented by trading partners) was ever subject to judicial interpretation, the meaning of the parties would be legally enhanced if the Model Agreement served more as a bridge between conventional concepts and EDI technical terms.[65] The Model Agreement, therefore, is intended to be "user-friendly".

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[63] *See id.*, Section 1.1 Comment 14. *See also infra* Part VII.A.3.

[64] *See* MODEL AGREEMENT, Section 2.3 Drafting Consideration 2. *See also infra* Part VI.A.2.

VI. THE LEGAL ISSUES

A. *Contract Formation*

The technology of electronic messaging systems introduces into commercial business practices a variety of methods for achieving accurate and timely communication not possible (and perhaps not capable of having been envisioned) when the existing provisions of the Uniform Commercial Code were adopted.[66] Moreover, despite repeated revisions of the Code, the new "Official Texts" of the Code have failed to recognize the impact of electronic communications in which no paper would be necessary to permit effective communication.[67] Recently, however, the sponsors of the Code gave their approval to a new Article 4A which marks the entry of the Uniform Commercial Code into the electronic age.[68] Meanwhile, in other legal areas, there has been similar movement to reconcile existing legal practices with the realities of "electronic commerce."[69]

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[65] For example, see the definition of "Document" in MODEL AGREEMENT, Section 1.1. With certain pervasive technical terms, the use of those terms was considered appropriate. Thus, the following terms are defined or explained within the Model Agreement and Commentary: "transaction sets" (Section 1.1 Comment 4); "standards" (Section 1.1 Comment 9); "published industry guidelines" (Section 1.1 Comment 12) "functional acknowledgement" (Section 2.2 Comment 2); "provider" (Section 1.2.1); and "signatures" (Section 1.5).

Certain other non-technical terms used in the Model Agreement are not defined within its provisions but by the Commentary (*see, e.g.*, MODEL AGREEMENT, Section 2.1 Comment 3 (defining "properly received")). For a discussion of the merit, or the lack of merit, in providing definitions by comment, see Rapson, *Deficiencies and Ambiguities in Lessor's Remedies Under Article 2A: Using Official Comments to Cure Problems in the Statute*, 39 ALB. L. REV. 875 (1988).

Common terms were also identified which had different meanings or different effects in the legal and technical arena; this presented an additional challenge to the Task Force. For example, when considering the writing requirement under U.C.C. § 2-201, a "signature" has a meaning different than the meaning and function of a "signature" as a technical device of authenticating the originator of a transmission within a security context. Similarly, authentication for purposes of U.C.C. § 2-201 is not the same as authentication for purposes of electronic transmissions. The Task Force attempted to construct the Model Agreement around the legal rather than technical meaning or function of any particular term, and relied upon the Commentary to alert counsel to the different meaning or effect of a term in the technical environment. *See, e.g.*, MODEL AGREEMENT, Section 1.5 & Comment 2.

[66] The Uniform Commercial Code was originally drafted between 1944 and 1950. The 1952 Official Text, the first official text, was followed by revised official texts in 1958, 1962, 1972 (containing amendments to Article 9), 1978 (containing a revised Article 8 on Investment Securities), and 1987 (containing a new Article 2A on Leases).

The failure of the Code to specifically accommodate the electronic communication of data has not been fatal to either the continued growth of electronic commercial practices or the continued vitality of the Code itself. The Code's provisions have a measure of flexibility so that, while the fit is less than ideal,[70] contracts formed with the use of electronic technology have been placed within the coverage of the Code.[71] Yet the existence of a less than ideal fit, in the opinion of several members of the Task Force, has had an impact upon adoption of EDI in commercial use. The Task Force determined that strategically addressing, within an EDI relationship, the issues of contract formation, validity and enforceability, terms and conditions, and liabilities and damages was essential to assuring confidence in the efficacy of electronic commerce. Each of these topics, and their specific treatment by the Model Agreement, will now be considered in turn.

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[67] The 1978 Official Text is a good example of the failure to accommodate within the Code changes in business practices brought about by the advancement of technology. While the 1978 Official Text contained a revised Article 8 on Investment Securities to respond to the "back office paper crunch" and facilitate the use of uncertificated securities, the text did not contemplate electronic trading of securities, nor deal with other modes of trading that had developed. *See* Mooney, *Beyond Negotiability: A New Model for Transfer and Pledge of Interest in Securities Controlled by Intermediaries*, -- CARDOZA L. REV. -- (1990) (analyzing the provisions of Article 8 and 9 of the Code, and federal regulations pertaining to book-entry treasury securities). *But see* U.C.C. § 2-206 Official Comment 1.

[68] [Insert Cross-cite to relevant articles in special edition.]

[69] *See infra* notes 178-181 and accompanying text. For a general discussion with respect to the recent condition of related European and other international law, see Y. POULLET & G.P.V. VANDENBERGHE, TELEBANKING, TELESHOPPING AND THE LAW (1988).

[70] In another context, Professor Fairfax Leary reminded commercial lawyers of the myth of the giant Procrustes, who extended his hospitality to travelers by stretching them, or cutting off their feet, to fit the size of the bed provided. Leary, *The Procrustean Bed of Finance Leasing*, 56 N.Y.U.L. REV. 1061 (1981). Although Professor Leary discussed the myth in the context of attempts to force leasing transactions into pre-existing legal concepts of sales or secured transactions, the same can be said of attempts to force electronically transmitted communications into existing legal frameworks developed around the use of paper as a means of communication.

1. *Receipt and Verification*

Electronic commerce creates opportunities for more rapid and precise understandings between the parties. The Task Force was impressed by the potential of EDI technology, when effectively implemented, to introduce increased accuracy, as well as increased speed, in the communication of business data. The significant functional feature of EDI is that it provides the ability for businesses to immediately confirm, by return message,[72] that a receiving party has received the original message, and to confirm that no errors or omissions occurred in the transmissions. In this manner, ambiguities or misunderstandings, as well as errors in the communication process, can be promptly resolved.[73] In addition, since messages which are inconsistent with past arrangements or established contractual limits can potentially be detected and investigated electronically,[74] trading partners are encouraged by the functions of the technology to establish procedures which better match the moment at which a legal obligation arises from a message with the time at which the parties may mutually verify the content of the message.

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[71] *See infra* notes 165-168 cases cited. Although the Task Force has confidence that contracts arising from the use of EDI, when supported by well-drafted trading partner agreements (*see infra* Part VI.B), could be dealt with under the existing provisions of the Code, the Task Force firmly believes that a reexamination and possible reform of Code provisions in light of electronic commercial practices should be the next step in confronting the legal implications of electronic contracting. *See infra* Part VIII.B. This would reduce, for the time being (until current concepts of technology's potential are again antiquated by the passage of time), the need for lawyers and courts to play the role of Procrustes. *See supra* note 70.

EDI agreements included in the Study showed little consensus concerning the time when electronically transmitted messages become effective or related issues. Most agreements did not define when effective delivery or receipt of any transmission occurred; a few agreements did contain precise language for when receipt could be constructively established.[75] These examples brought to the attention of the Task Force the need to consider the proper classification of EDI when used as a medium of communication--a medium which did not clearly fit within existing applicable legal principles under the Code and the common law relating to contract formation.

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[72] The EDI community generally uses the terms "message" and "transaction set" interchangeably; "message" is the more common term internationally. In this Report, the term "message" is used generically to mean the communication sent by the parties without any specific technical meaning.

[73] *See infra* Part VI.A.1.

[74] Software functions may be established within computers to screen incoming messages for such things as unusually large quantities or irregular prices and to refer such messages for human review and analysis before further processing occurs. *See supra* Part IV.

[75] These provisions frequently favored one trading partner over another. For a discussion of the manner in which the similar question of acceptance was addressed in these agreements, see *infra* Part VI.A.2.

The drafters of Article 2 of the Code specifically did not address the question of when a contract is effectively formed.[76] That process occurs under applicable principles of common law.[77] The Task Force considered that, for the purpose of its analysis, the Second Restatement of Contracts provided an effective structure for analyzing the treatment of the role of the medium of communication in the contract formation process.[78]

The Restatement allocates between contracting parties the risks relating to the method of communication chosen by each party, and identifies the relative priority of contradictory or simultaneous communications (particularly when the means of communication utilized, such as mailed writings, do not provide for instantaneous, direct interaction between the parties). The Restatement distinguishes between two situations. In the first, the parties are in each other's presence and are able to communicate without any substantial lapse of time. In the second, the parties are not in each other's presence and the means of communication utilized to transmit offers, acceptances, modifications, revocations and other messages result in a delay between the dispatch and receipt of those communications. In the latter situation, the common law provides, for example, the "mailbox rule," pursuant to which the dispatch of a message is effective without regard to whether the message ever reaches the other party.[79] An important premise upon which those rules are predicated is the notion that delayed media, such as mailed writings, do not provide either party the ability to verify in a timely fashion that receipt of a message has occurred and that the message as received is without errors.[80] However, section 64 of the Restatement specifically acknowledges the use of technology in communication, in the form of "telephone or other medium of substantially instantaneous two-way communication," and sets forth the principle that communications using those technologies are governed by the same principles that apply when the parties are in the presence of each other.[81]

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[76] The Code provides that a contract may be formed in any manner, including through the conduct of the parties, and has limited provisions dealing with acceptance of offers by shipment. *See, e.g.*, U.C.C. §§ 2-204, 2-206. The Code is silent, however, on rules pertaining to the timing of contract formation, except to the extent it provides that a contract may be formed even though the time of its making is uncertain. *Id.* § 2-206. Consequently, common law principles of contract formation continue to apply. *Id.* § 1-103.

[77] *See id.* § 1-103. The Code more specifically addresses the effectiveness of additional commercial communications relating to contracts and their validity and enforceability. *See, e.g., id.* § 2-207 (the "battle of the forms" provision).

[78] *See, e.g.*, RESTATEMENT (SECOND) OF CONTRACTS §§ 64-65 (1981). *See also* 1 A. CORBIN, CORBIN ON CONTRACTS §§ 39-41, 62-66, 72-81 (1963 & Supp. 1989) [hereinafter 1 CORBIN]; 1 S. WILLISTON, WILLISTON ON CONTRACTS §§ 81-89 (3d ed. 1957) [hereinafter 1 WILLISTON].

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[79] RESTATEMENT (SECOND) OF CONTRACTS, § 63 (1981). *See* Adams v. Lindsell, 1 Barn & Ald. 681 (K.B. 1818); 1 WILLISTON, *supra* note [24B], § 81; RESTATEMENT (SECOND) OF CONTRACTS §§ 40 *et seq.* (1981). *See also infra* note 140 (authorities cited).

[80] *See* Murray, *An Essay on the Formation of Contracts and Related Matters Under the United Nations Convention on Contracts for the International Sale of Goods*, 8 J. L. & COM. 11, 27-29 (1988); *see also* Worms v. Burgess, 620 P.2d 455, 457 (Okla. App. Ct. 1980) ("The mailbox rule imposes this uncertainty on the offeror. This risk allocation is eminently reasonable when it is recognized that the offeror can shift this risk by requiring receipt of acceptance when he makes the offer.").

As discussed, EDI has the capability to permit prompt, reliable verification that a message has been received, and that it has been received intact and without communication errors.[82] This verification can occur immediately, and several EDI industry standards require such verification to be sent in a commercially prompt manner.[83] If there are ambiguities or misunderstandings perceived by either party, the problems can be corrected by additional, immediate communication. If there is a failure in the communication, EDI permits one or both parties to know or have reason to know of the failure by virtue of the capability of the technology to provide timely verifications. Of course, a distinguishing characteristic of EDI is that the communication is transmitted and received in an essentially "written" format; to review the message, users "read" the data, either electronically or by human review (presented either as a screen display or a printout on paper). The Task Force concluded that the "written" characteristic was not important to its analysis; the applicable legal principles focus on the immediacy of communication, and not the format. Accordingly, the use of EDI to communicate was determined to satisfy the criteria of section 64 of the Restatement.[84] As a result, the Model Agreement incorporates rules that parallel those provided by common law for other types of technology which facilitate instantaneous communication.[85]

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[81] RESTATEMENT (SECOND) OF CONTRACTS § 64 (1981); 1 CORBIN, *supra* note 78, § 79; 1 WILLISTON, *supra* note 78, § 82A. In effect, those principles are reflected by the remaining provisions of Chapter 3 of the Restatement, excluding § 64.

[82] *See supra* note 72; *infra* notes 94-97 and accompanying text.

[83] For example, the communication standard widely adopted in the grocery industry requires acknowledgements to be transmitted by the next business day; in practice, such acknowledgements are sent more quickly by most EDI participants. *But see infra* note 96.

The Model Agreement constructs an environment in which receipt, and not transmission, determines the legal effect of any message transmitted by EDI, and in which verification of the transmission is a mandatory element (with certain negotiated exceptions) of conducting business with EDI. The functionality of the technology permits a more fair allocation of the benefits and burdens, and resulting legal consequences, of the choice of a communication medium. Existing rules proceed from the proposition that the originating party controls the selection of the means of communication (and absorbs its risk).[86] With EDI, however, the choice of an electronic means of communication is essentially mutual and different rules reflecting that mutuality seem appropriate. Three components highlight the response of the Model Agreement.

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[84] RESTATEMENT (SECOND) OF CONTRACTS § 64 comment b (1981) provides, in part:

> When parties are in each other's presence, ambiguities and misunderstandings, if perceived by either party, can be cleared up on the spot. . . . The risk of failure of telephone or teletype or other similar communication is similar in that ordinarily one or both parties will know or have reason to know of the failure, and the same principles apply.

The advantage of EDI is that it provides the potential for instantaneous communication while being enhanced by features of reliability associated with customary written formats.

[85] The Task Force is unaware of any recent cases applying § 64 of the Restatement to new technology, as allowed by § 64's language "other medium of substantially instantaneous two-way communication." On January 4, 1990, a LEXIS search in the federal and state databases was made using the search "Restatement W/6 64 and date (aft 1985)"; no relevant cases were located.

[86] An offeror at common law is the master of his offer, and hence can designate the medium to be used in accepting the offer. RESTATEMENT (SECOND) OF CONTRACTS § 30(2) & comment a (1981). In the absence of such a specification, the offer may be accepted in any manner and by any medium reasonable in the circumstances. *Id.* § 30(2). A medium of acceptance is reasonable if it is the one used by the offeror or one customary in similar transactions at the time and place the offer is received. *Id.* § 65. *See generally* 1 CORBIN, *supra* note 78, § 88; 1 WILLISTON, *supra* note 78, §§ 76, 83, 88. *See also supra* note 80.

First, the Model Agreement rejects the principle that transmitting a message has any legal significance. Section 2.1 of the Model Agreement provides that no Document[87] shall give rise to any obligation until "properly received." This requires that the transmitted Document be accessible at a computer selected by the receiving party which must be designated in the Appendix (known as the "Receipt Computer").[88] The Task Force determined that, given the ability of the technology to permit the party originating the transmission of any Document to effectively confirm receipt, it was inappropriate that the mere dispatch of any Document should be sufficient for any legal purpose.[89]

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[87] The term "Document" is defined by the Model Agreement to include messages electronically transmitted or received between the trading partners in accordance with certain specified transaction sets. *See* MODEL AGREEMENT, Section 1.1. *See also infra* Part VII.A.1.

[88] By permitting each party to designate its Receipt Computer, the Model Agreement provides flexibility. A Receipt Computer may be the computer of a Provider, the main computer of the recipient or a specific terminal within the recipient's internal network (for example, a billing supervisor's desk). Each party thereby defers "receipt" until the "right" person or machine has an opportunity to have access to the transmitted data. *See* MODEL AGREEMENT, Section 2.1 Comment 3.

[89] The Model Agreement is consistent with the Code's definition of what constitutes receipt. U.C.C. § 1-201(26) provides, in part: "A person 'receives' a notice or notification when . . . (b) it is duly delivered at . . . any other place held out by him as the place for receipt for such communications." A designation of a Receipt Computer serves that purpose. RESTATEMENT (SECOND) OF CONTRACTS § 68 (1981) defines "receipt" in a similar vein as when a writing "comes into the possession of the person addressed . . . or when it is deposited in some place which he has authorized as the place for this or similar communications to be deposited for him." *See also* 1 CORBIN, *supra* note 78, § 78; 1 WILLISTON, *supra* note 78, §§ 88-89. *But see infra* notes 108-114 and accompanying text.

The Model Agreement, in defining receipt (and thereby also determining, in applicable cases, the timing of the legal effectiveness of a transmission[90]), does not require that a Document actually be examined, only that the Document be accessible. In a paper-based environment, this is similar to when a letter is delivered, but the envelope remains unopened.[91] In evaluating EDI commercial practices, the Study determined that many participants accumulate messages in their "electronic mailbox" and only review them at particular, regularly scheduled intervals. There is no dramatic significance in this practice; it is no different than opening the daily mail at a regular time. In rejecting all variations of the dispatch rule in favor of the principle of receipt, however, the Task Force evaluated whether this business practice impaired the effectiveness of the rules proposed by the Model Agreement and determined, in fact, that it did not. To the extent a receiving party delays reviewing the message, the receiving party bears the risk incident to having not had an opportunity to respond to the transmitted message at an earlier time.[92]

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[90] *See* RESTATEMENT (SECOND) OF CONTRACTS §§ 40 *et seq*. (1981).

[91] In this regard, the parties must decide, through negotiation, which computer each party will designate as its Receipt Computer. A transmitting party may not wish to delay the effectiveness of its messages until the last possible machine on the other end of the communication line (*e.g.*, a purchasing department supervisor's personal computer), while a receiving party may not wish to be legally bound at the time a Document is received by its service provider's computer, but not actually transmitted and delivered to such party.

The fact that proper receipt of a Document has occurred does not automatically bestow it with legal significance. Section 2.1 only establishes, with respect to electronic commerce, an additional requirement for the effectiveness of any business communications sent electronically. The principle of proper receipt does not override other requirements which the Code or common law may establish with regard to business communications.[93] Therefore, even if a Document is properly received in accordance with Section 2.1, it may not have legal effect if the Document does not satisfy other applicable precedents established by the Code or common law.

Second, the Model Agreement imposes an affirmative obligation upon the receiving party of any Document, upon proper receipt, to promptly and properly transmit in return a message verifying receipt of the original Document.[94] The format of this verification is a specific type of Document called a functional acknowledgement.[95] An appealing aspect favoring the use of functional acknowledgements is that, for a relatively low cost for sending and receiving such message, the party sending the original Document may know promptly that it has been received, and an audit trail component verifying receipt is created.[96] In the absence of receiving verification (by functional acknowledgement), the originating party is on notice that communication may not have effectively occurred.[97]

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[92] The Task Force considered including a rule requiring each trading partner to agree to review its mailbox at specified intervals (*see* ELECTRONIC MESSAGING, *supra* note 1, at 30), but determined that such a rule ran counter to the Model Agreement principle of flexibility. Under the Model Agreement, the receiving party bears the risk of non-review, while the transmitting party, upon receiving verification of receipt (*see infra* text accompanying notes 94-114) can reasonably rely on that verification. Moreover, the agreements included in the Study showed no tendency to impose any similar requirements within existing relationships. *See also infra* notes 133-136 and accompanying text.

[93] Such requirements, with particular regard to seasonableness of notices, or the content of notices, continue to control. For example, assume ABC transmits, and XYZ properly receives, a notice of rejection which fails to state a particular defect in the product which was ascertainable by reasonable inspection. This omission, pursuant to U.C.C. § 2-605(1), may preclude ABC from relying on that defect to justify its rejection of the goods, regardless of the medium of communication employed. U.C.C. § 2-605 provides, in part: "(1) the buyer's failure to state in connection with rejection a particular defect which is ascertainable by reasonable inspection precludes him from relying on the unstated defect to justify rejection."

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[94] The Model Agreement does permit trading partners to opt out of the requirement for providing verification where the circumstances warrant. For example, the parties may elect to verify in another manner, such as transaction sequence checking (a method, which emphasizes identifying duplicate or missing transmissions, by which parties may mutually confirm what has been transmitted between them). *See* MODEL AGREEMENT, Section 2.2 & Comment 5.

[95] *See id.*, Section 2.2. A "functional acknowledgement" is a transaction set which confirms that receipt of a Document (in the format specified by the functional acknowledgement) has occurred and that all required portions of the Document have been received and are syntactically correct. A functional acknowledgement does not confirm the substantive content of the related Document but may be used to identify whether, in fact, omissions or errors in format or syntax have occurred. In the event such errors are identified, the Model Agreement shifts the risk of miscommunication to the receiving party, unless the receiving party notifies the originating party of those errors. *See id.*, Section 2.4; *infra* Part VI.A.3.

[96] Some trading partners refuse to transmit or receive functional acknowledgements. This refusal is based upon the conclusion that the high reliability and accuracy of the original messages does not justify the incremental cost of transmitting functional acknowledgements. This practice fails to take advantage of the overall capability of EDI to verify the absence of ambiguities, omissions or misunderstandings, although other elements of communication procedures under development may provide other methods of evidencing delivery.

[97] The Task Force considered a proposal that, in the absence of appropriate verification of receipt, the originating party should be affirmatively required by the Model Agreement to re-transmit the original Document through the use of EDI. The Task Force concluded that this requirement could not be sustained for two reasons. First, under current law, parties have the flexibility to use alternate means of communications if the means originally selected is unavailable. *See, e.g.*, U.C.C. § 2-206(1)(a). Accordingly, mandating re-use of EDI seemed to unnecessarily restrict other available options. Second, following the original transmission of any Document, circumstances could change which might leave the originating party considering itself fortunate that the original message was not successful (*e.g.*, an intervening change in the price of raw material is announced). A mandatory requirement to re-transmit would unnecessarily impair the originating party's freedom at that point to avoid the contract.

Whether or not verification is provided will not alter the legal significance of an initial Document which has been properly received. Section 2.1 and other applicable law control in that respect. In the event the receiving party fails to provide verification, a breach of the Model Agreement occurs, for which the receiving party may be liable in damages.[98] However, the party initially transmitting a Document may have an obligation to make reasonable inquiries or take other actions to discharge any duty which may exist to mitigate damages arising from a breach of the verification obligation by the receiving party.[99]

Third, the Model Agreement provides that a functional acknowledgement shall constitute conclusive evidence of the proper receipt of any Document.[100] This provision is, in fact, designed to protect the expectation that a functional acknowledgement, when received in return, may be relied upon as evidence that "proper receipt" has occurred. Functional acknowledgements are not initiated by Providers; only a receiving party initiates verification of receipt and only following the delivery of a Document (either directly or from the receiving party's Provider).[101] However, the Study found that a functional acknowledgement may be initiated within a trading partner's internal computer network from a computer other than the computer on which the content of the original Document is subsequently processed. The Commentary consequently instructs counsel to ensure that the Receipt Computer is designated in order that a functional acknowledgement may be transmitted "promptly upon receipt" of any Document as required by Section 2.2.[102]

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[98] The liability of the receiving party arises independent of the underlying commercial transaction to which the communications relate. The Model Agreement limits the liability of the parties for certain damages arising from a breach of its provisions. *See* MODEL AGREEMENT, Section 4.6. However such limitation is not intended to be applicable to a breach of Section 2.2. Note also that damages may only be possible where contract formation is not at issue; it appears unreasonable for an originating party operating electronically to assume a contract has been effectively made, modified or revoked and rely to its detriment on that assumption, in the absence of verification. Indeed, it appears unlikely an originating party could reasonably change its position in reliance on the mere transmission of any Document. *But see infra* notes 123-125 and accompanying text.

[99] *See* MODEL AGREEMENT, Section 2.2 Comments 4, 6.

[100] *See id.*, Section 2.2 & Comments 1, 2.

The Task Force considered two alternative approaches that would have required verification as a requirement for the legal effectiveness of any Document. One approach, to condition effectiveness of any Document upon the receipt of a return functional acknowledgement, would allow certain commercial notices (such as a notice of rejection of goods) to be effective at the discretion of the receiving party.[103] For example, XYZ could avoid the consequences of receiving a notice of rejection from ABC by simply electing not to forward a functional acknowledgement in return.[104] Such a result would permit the choice of the medium of communication to re-distribute the balance of interests embodied by the Code, particularly with respect to breach of contract and remedies with regard to the underlying commercial transactions subject to Article 2. The Task Force determined that type of re-distribution would create a major obstacle to the use of EDI. Indeed, under the Model Agreement, the measure of damages incurred by the party giving such notices for a failure to verify, constituting a breach of Section 2.2, would be comparable to any other failure to respond to such notices.

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[101] One Provider identified in the Study offers to transmit functional acknowledgements on behalf of its customers. The Model Agreement would not prevent this practice; however, the Task Force concluded such a practice should not be encouraged since it places a risk-shifting event (the transmission of the functional acknowledgement) into the control of a third party (the Provider).

[102] MODEL AGREEMENT, Section 2.2 Comment 3.

[103] Article 2 of the Code, which provides for certain types of commercial notices, such as notices of rejection, merely requires that one party "notify" the other. *See, e.g.*, U.C.C. §§ 2-602 (seasonable notification of rejection), 2-607(3)(a) (notification of breach), 2-608 (notification of revocation). Under the Code, "notification" means "such steps as may be reasonably required to inform the other in ordinary course *whether or not such other actually comes to know of it.*" U.C.C. § 1-201(26) (emphasis added). Under MODEL AGREEMENT, Section 2.1, commercial notices do not have legal significance until received (rather than merely being sent), but they are effective even if the recipient fails in accordance with Section 2.2 to send a related functional acknowledgement.

The other alternative provided for the delay of the effectiveness of proper receipt when the original verification showed errors in the original transmission; effectiveness would require elimination of all of the errors. Commercial communications, however, may be effective even if errors or omissions exist;[105] the Task Force concluded that legal principle was not to be disturbed merely by the choice of an alternative medium of communication. A functional acknowledgement which identifies errors in a properly received Document does not preclude the Document from having legal effect. If the missing data is immaterial, the Document may be effective. If the missing data is material, the Document may have no effect even if properly received and verified.[106] If the errors render the Document garbled or unintelligible, then the Model Agreement respectively allocates the burden of that situation as well.[107]

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[104] A logical and undesirable consequence of requiring verification before such notices became effective would be to force parties to continue to use paper communications, in order to preserve their legal rights under the Code, despite the availability of EDI.

[105] *See, e.g.*, U.C.C. § 2-607 & Official Comment 4. *See also* T.J. Stevens & Co., Inc. v. 81,193 Bags of Flour, 629 F.2d 338 (5th Cir. 1980) (applying U.C.C. § 2-607). *But see* U.C.C. § 2-605(1); *supra* note 93.

By providing that proper receipt is a precedent to any resulting obligation, the Model Agreement goes beyond the "mailbox rule" and changes the definition of what constitutes the giving of "notice" under U.C.C. section 1-201(26).[108] This change affects each instance where the giving of notice is important;[109] nothing is altered where actual receipt is already required.[110] In this respect, the Model Agreement capitalizes on the flexibility of the Code to permit parties to vary its provisions by agreement, and to re-allocate and divide the risks or burdens which the Code considers.[111] Of course, the ability of trading partners to send electronically specific types of notices contemplated by the Code does not necessarily preclude such notices from being sent by other means acceptable as "reasonable" under applicable provisions.[112] If a trading partner chooses to send a "notice" through the use of EDI, however, such party loses the benefit of the operation of U.C.C. section 1-201(26) and must prove that a Document which is a "notice" is "properly received."[113]

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[106] For an example, see *supra* note 93.

[107] *See infra* Part VI.A.3.

[108] *See supra* note 89.

[109] In Article 2 of the Code, "notice," "notifies" or "notify" are referred to 45 times. Hawkland & Maggs, *UCC Concordance*, 1974 U. ILL. L.F. 1, 57 (analyzing the 1962 version of the Illinois U.C.C.).

[110] *See, e.g.*, U.C.C. §§ 2-209(5), 2-309(3), 2-609(4), 2-616(2).

[111] *See supra* text accompanying notes 57-59.

The Task Force determined, in the final analysis, that communication through EDI was best considered as instantaneous communication, for which the principle of receipt was appropriate.[114] The result of that decision is most pronounced when directly considering the relationship between offer and acceptance embodied by the Model Agreement.

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[112] *See* U.C.C. § 2-206 Official Comment a. *But see infra* note 113.

[113] Indeed, those implementing EDI as an exclusive method of communicating all substantive business messages with a trading partner may, over time, constructively lose the availability of other means of communicating since, if EDI is established as a course of dealing between the parties, any other means of communication may not be reasonable, and therefore would be ineffective in the absence of actual receipt. *See* U.C.C. § 2-206(1)(a); RESTATEMENT (SECOND) OF CONTRACTS § 65 & comment b (1981). *See also* 1 CORBIN, *supra* note 78, §§ 88 & n.18; 1 J. WHITE & R. SUMMERS, UNIFORM COMMERCIAL CODE § 1-5 (3d ed. 1988) [hereinafter WHITE & SUMMERS].

No standard EDI formats have been developed yet for many of the types of notices anticipated by the Code as an integral part of commercial communication. EDI does permit particular Documents to consist, in whole or in part, of "free text," which is information which cannot be processed by normal computer functions. A difficulty with the use of free text is that application programs may not be written to identify and highlight free text for human review; thus, a message sent in free text may have legal significance upon receipt. *See also* MODEL AGREEMENT, Section 1.1 Comment 4. If trading partners elect to use "free text" to communicate such notices and other additional types of messages contemplated by the Code, it may be appropriate to specify those uses in the Appendix.

[114] The Commentary contains examples of the operation of the provisions relating to receipt and verification. *See* MODEL AGREEMENT, Section 2.4 Comment 6.

2. *Offer and Acceptance*

In considering the treatment of the contract formation process under existing EDI agreements, the Task Force identified two general trends. First, many of the agreements failed to address the manner in which purchase obligations became binding in an environment of electronic communication. Second, to the extent acceptance was addressed by the agreements, many took an approach that appeared to contradict the potential capability of EDI to assure clear, unequivocal mutual understanding.

Within existing EDI formats, a variety of messages may be communicated which may substantively affirm the intent of a seller to be bound by a purchase order which it has received.[115] However, in several agreements, the availability of these messages to confirm the existence of mutual understanding was not recognized. The receiving party, without further action on its behalf, was deemed to be bound by the mere receipt of an electronic purchase order, while in other circumstances the transmission of a functional acknowledgement or shipment of the goods was deemed to constitute the act of acceptance.[116] Under these agreements, the receiving party is not provided a meaningful opportunity to immediately confirm its agreement to the terms of the purchase, notwithstanding the ease, and relative low cost, of communicating a substantive confirmation.[117]

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[115] Examples include purchase order acknowledgements, shipping notices and notices of contract awards.

[116] The Task Force concluded that functional acknowledgements are particularly inappropriate as evidence sufficient to indicate the existence of a contract. *See supra* note 95.

As a consequence of its findings, the Task Force evaluated whether the Model Agreement should specifically consider the topic of acceptance. The decision was made to expressly address acceptance as a result of (a) the adoption of the principle of receipt governing all EDI communication, (b) the desire to account for the most significant implications of classifying EDI as a means of instantaneous communication and (c) an interest in utilizing the flexibility afforded by the technology to vest trading partners with control over the contract formation process. In addition, the Task Force determined, in large part due to the response to working drafts of the Model Agreement from EDI users, who themselves were unclear about when a contract is formed using EDI, and who anticipated that the Model Agreement could provide guidance on the issue. Influenced by the examples included in the Study, the Task Force concluded that care was required to not mandate a particular format for acceptance and not impose particular terms and conditions for controlling offers and acceptances. In that regard, the use of EDI did not justify a restriction of the parties' freedom of contract.[118] Section 2.3 of the Model Agreement is the resulting product.

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[117] The Study also identified circumstances, for example within "just-in-time" purchasing arrangements, where the need for prompt delivery of goods was thought to outweigh the need for verification of the contract, particularly if highly reliable performance of the communication system has been confirmed by past practice. The Task Force concluded otherwise. *See also supra* note 96; *infra* notes 126-127 and accompanying text.

[118] For a discussion of the treatment of terms and conditions by the Model Agreement, see *infra* Part VI.C.

Offers are treated by the Model Agreement like any other Document. An offer does not give rise to any obligation until properly received.[119] Irrespective of whether the receiving party wishes to accept the offer, the receiving party should transmit a functional acknowledgement in return.[120] Of course, at common law, an offer creates no contract until accepted. With respect to acceptance, the Model Agreement unambiguously requires that, for each type of Document, the parties are to specify in the Appendix whether acceptance is required and, if so, the corresponding Acceptance Document that will evidence such acceptance. If acceptance is required by the Model Agreement, no obligation will arise from any Document unless and until an appropriate Acceptance Document has been properly received in return. By preserving the ability of the parties to define by negotiation what constitutes an appropriate Acceptance Document, the Model Agreement permits the parties to define the level of certainty and agreement to be achieved with respect to the terms of any Document. For example, the parties may provide that before a purchase order gives rise to an enforceable contract, the recipient of the purchase order must accept by the issuance of a purchase order acknowledgement. In contrast to a functional acknowledgement, an Acceptance Document responds to the substance of the original transmission and signifies that the substantive terms are acceptable. An Acceptance Document may be a computer generated response, or it may require human evaluation at the receiving end before the response can be transmitted.[121]

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[119] The Model Agreement is in accord with international law in this respect. CISG, *supra* note 26, art. 15(1) provides: "An offer becomes effective when it reaches the offeree." In fact, as a general matter, CISG generally adopts a receipt rule throughout its provisions. *See, e.g., id.*, CISG arts. 5, 16(1), 17, 18(2), 20(1). Article 24 defines "reaches" to mean delivery to the place of business or mailing address of the addressee. This concept parallels the concept of accessibility contained within Section 2.1 of the Model Agreement. *See supra* Part VI.A.1. However, article 18(3) preserves the concept reflected by U.C.C. § 2-201(3)(c) (part performance exception to the Statute of Frauds). *See generally* Winship, *Formation of International Sales Contracts Under the 1980 Vienna Convention*, 17 INT'L LAW. 1 (1983). *See also* Murray, *supra* note 80; Garro, *Reconciliation of Legal Traditions in the U.N. Convention on Contracts for the International Sale of Goods*, 23 INT'L LAW. 443 (1989).

[120] *See* MODEL AGREEMENT, Section 2.2; *supra* Part VI.A.1. The only exception, of course, is if the functional acknowledgement serves as the Acceptance Document, a result which the Task Force strongly discourages since the functional acknowledgement fails to confirm that there exists understanding by the receiving party of the content of the original Document.

As drafted, the concept of acceptance under the Model Agreement is not limited to the contract formation process.[122] An Acceptance Document might be specified for a variety of communications to better assure the absence of misunderstanding. A shipping notice may require "acceptance" by means of a confirmation of shipment date, in order to assure the buyer may accommodate delivery at the proposed time. Of course, for certain Documents (for example, a notice of rejection of goods from a buyer), no Acceptance Document would be appropriate.[123] If, for any Document, no Acceptance Document is specified, such Document will only be given legal effect upon proper receipt; what that legal effect will be will depend upon the type of communication and its treatment under applicable law. Some Documents, such as a notice of rejection, should have legal effect upon proper receipt, with nothing more. In no event, however, does the Model Agreement eliminate the need for acceptance of an offer. In the absence of an Acceptance Document being specified for a Document from which an offer is made, no obligation may arise before the Document has been properly received.[124] Then, even if no functional acknowledgement is issued, the conduct of the receiving party, if it acts to accept or otherwise justifiably relies upon the original Document, may be sufficient to create a binding obligation.[125]

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[121] The more human intervention required before the transmission of any Document, including an Acceptance Document, the slower the resulting communication and the less significant the operational benefits of EDI. The needs of a particular business may well warrant human intervention. The elimination of human intervention, however, does not mean the elimination of any review of the substantive message. It is possible to program the Receipt Computer to review the incoming message against certain pre-defined variables, and to issue an Acceptance Document only if the message falls within certain parameters. The Receipt Computer, for example, can be programmed to review an incoming purchase order and determine such matters as: (1) whether the quantity and quality of the requested goods was in stock; (2) whether the quantity order is within the limits pre-established by the trading parties or is within the normal limits ordered by the trading party; (3) whether the price or other specified terms are current and acceptable; (4) whether the delivery point is one which has been agreed upon or used in the past; and (5) whether the time for delivery can be accommodated. Once all these factors are reviewed, and found within pre-defined limits, the computer can then generate the required Acceptance Document.

The Model Agreement does not establish a time-frame in which Acceptance Documents must be returned to be effective. Such topics may be addressed as a part of the general terms and conditions. *See* MODEL AGREEMENT, Section 3.1; *infra* Part V.I.C.

[122] The Task Force rejected a proposal to limit Section 2.3 of the Model Agreement solely to the process of offer and acceptance in order to not underutilize the capability of the technology to enhance mutual certainty.

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[123] *See supra* notes 103 and 104.

[124] For further discussion of how proper receipt is not, in itself, sufficient, see *supra* text accompanying note 93.

[125] *See generally* U.C.C. §§ 2-204(1), 2-206(1); RESTATEMENT (SECOND) OF CONTRACTS § 90 (1981). In addition, if the parties establish a course of performance involving the transmission of a purchase order, for which no Acceptance Document is provided but the contract is nevertheless routinely performed, the absence of an Acceptance Document will not interfere with the existence of a valid contract. *See* U.C.C. § 2-208; *see also infra* notes 190-193 and accompanying text.

Under some current EDI agreements, the delivery of services or material against a purchase order, even if the purchase order were not acknowledged or accepted,[126] was treated as an acceptance.[127] The Task Force discourages such an approach. Although there may be instances, such as "just-in-time" transactions, where the parties want the recipient of the purchase order to act as quickly as possible in sending the ordered goods, the structure of the Model Agreement, with its requirements of verification and Acceptance Documents, is no impediment to such an arrangement. If the parties designate an Acceptance Document, the receiving party may program its computer such that the Acceptance Document may be immediately transmitted by the Receipt Computer without any human intervention or evaluation (or the corresponding delay) but with substantive review still occurring. Thus, the risks inherent in acceptance by other means are eliminated. Alternatively, the parties may choose not to designate any Acceptance Document. The Task Force also discourages that approach. The active use of Acceptance Documents does not appear to interfere with the business purpose of achieving speed of performance and contributes to the clarity of understanding between the parties. The Model Agreement promotes the capability of the technology to more quickly confirm the existence of mutual agreement in preference to the general principles of the Code and common law that an offer may be accepted by return promise or by performance as well as the principle that an acceptance may be effective even if not received.[128] Since the decision to use the technology carries with it an implied decision to implement commercial transactions with EDI rather than traditional means of communication, any limitation by the Model Agreement on the manner of acceptance is not restrictive of, but consistent with, the intentions of EDI trading partners.

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[126] If an Acceptance Document is not specified, this approach remains possible under the Model Agreement. *But see infra* text accompanying notes 127-128.

[127] The Model Agreement is substantially consistent with the law under the Restatement and the Code which anticipate that notice of acceptance, even when acceptance occurs by performance, may be significant to assuring the formation of the contract. *See* RESTATEMENT (SECOND) OF CONTRACTS § 54 (1981) (where an offer invites acceptance by performance, no notification is required, unless the offeree has reason to know that the offeror will not learn of performance promptly); U.C.C. § 2-206 (an offeror not notified of acceptance within a reasonable time, where commencing performance is a reasonable mode of acceptance, may treat the offer as having lapsed before acceptance). *See generally* 1 CORBIN, *supra* note 78, §§ 67-71; 1 WILLISTON, *supra* note 78, §§ 68-70.

Section 2.3 of the Model Agreement, by implication, requires that acceptance, if required by the Appendix, be given in the same manner (*i.e.*, by EDI communication) as the offer. Although the Code permits acceptance to be transmitted in any reasonable manner,[129] the Task Force determined that the mutual course of conduct by trading partners to communicate through EDI was sufficient, as a whole, to justify limiting the manner in which acceptance may occur without any resulting detriment to the interests of the offeree.[130] The Model Agreement does not contemplate that EDI may be used to communicate acceptance with respect to an offer which was communicated by other means.[131] A closed system of communication emerges, but the Task Force considered that result to be consistent with the reliability and efficacy of the related technology.[132]

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[128] *See* U.C.C. § 2-206(1)(b); RESTATEMENT (SECOND) OF CONTRACTS §§ 62, 63(a) (1981).

[129] *See* U.C.C. § 2-206 Official Comment 1. *See also* RESTATEMENT (SECOND) OF CONTRACTS § 65 (1981).

[130] Mandating a medium of acceptance that is the same as that used by the offeror is comfortably within the concept of reasonableness. *See* RESTATEMENT (SECOND) OF CONTRACTS § 65 (1981) ("medium of acceptance is reasonable if it is the one used by the offeror"). Comment a thereto confirms that "[reasonableness is a function of] the speed and reliability of the medium, a prior course of dealing between the parties and the usage of trade."

Two aspects of the law of contract formation are not addressed by the Model Agreement, in part due to the current condition of EDI as a commercial practice. First, the development of EDI to date has not actively incorporated the commercial practice of firm or irrevocable offers held open for a specified period of time.[133] The Task Force did not consider special treatment necessary in the Model Agreement for firm or irrevocable offers.[134] The effectiveness of an acceptance of a firm offer would be determined like any other acceptance and arises, if at all, only at the moment the Acceptance Document is properly received (pursuant to Section 2.1 of the Model Agreement). Should an Acceptance Document be transmitted prior to the expiration of the period for which the offer remains valid which is not "properly received" until after the expiration of such period, no contract is formed.[135] The offeree assumes that risk in negotiating what will constitute the Receipt Computer of the offeror.[136]

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[131] Such a result is possible, but the party selecting EDI in that case will have to demonstrate that its choice was reasonable.

[132] Section 2.3 does not, however, totally replace all common law doctrines of offer and acceptance. If the recipient of the purchase order does ship the goods without issuing any required verification or Acceptance Document, its act could be considered a counteroffer which may be accepted by the originating party. *See* RESTATEMENT (SECOND) OF CONTRACTS § 70 (1981); 1 CORBIN, *supra* note 78, § 74; 1 WILLISTON, *supra* note 78, §§ 92-93.

[133] *See* U.C.C. § 2-205. The Code specifically requires firm offers to be in writing; however, the Model Agreement provides that any properly transmitted Document shall be considered to be "in writing." MODEL AGREEMENT, Section 3.3.2; *see infra* Part VI.B.1. One question that remains uncertain under current domestic and international law is identifying the time at which any specified period commences. Arguably, under the Model Agreement, any such time period does not commence until "properly received" by virtue of the language of Section 2.1. *See* 1 CORBIN, *supra* note 78, §§ 35 (duration of power of acceptance), 37 (effect of delay in delivery of offer); 1 WILLISTON, *supra* note 78, §§ 50-63 (duration and termination of offers), 53A (ambiguous time limitations of offers). With respect to international law, see CISG, *supra* note 26, arts. 15(2), 16(1), 22; Murray, *supra* note 80, at 27-38 (and authorities cited therein).

[134] An offer made without a specified time stated is held open for a reasonable time, whether communicated electronically or not. RESTATEMENT (SECOND) OF CONTRACTS § 41(1) (1981). *See generally* 1 CORBIN, *supra* note 78, §§ 35-36; 1 WILLISTON, *supra* note 78, §§ 53-54. The mere fact that an offer is communicated electronically does not mandate a waiver or modification of that principle; however, the regular use of EDI technology may shorten what constitutes a reasonable period of time, based in part upon the usage and course of conduct of the parties. *See* RESTATEMENT (SECOND) OF CONTRACTS § 41(2) (1981) (what is reasonable is a question of fact, depending upon all of the circumstances); *id.* § 41(2) comment b (course of dealing and usage of trade are relevant). *See also infra* notes 190-193 and accompanying text.

Second, an offeror generally has not been provided standard formats by which to send notices of revocation.[137] Thus, with respect to revocation by EDI, it may generally occur only with the use of "free text." In the absence of the use of "free text" (and even where free text is used, its validity is unclear absent prior agreement), an offeror who has transmitted an offer by EDI must resort to an alternate means of communication (for example, by letter or facsimile transmission[138]) to attempt revocation. At common law, a revocation of an offer is not effective until received by the offeree; if the offeree has dispatched its acceptance, the revocation is ineffective.[139] This disparity has been criticized by several commentators.[140] Under the Model Agreement, if revocation is transmitted by EDI, its validity will be conditioned upon its "proper receipt".[141] The hardship on the offeror at common law -- resulting from the fact that an acceptance, once dispatched, may render futile an offeror's attempts to revoke -- is alleviated; if the revocation is received before the acceptance is received, there is no contract.[142]

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[135] Under CISG, *supra* note 26, article 16(2)(a) strikes a compromise between the common and civil law treatment of revocability with which the Model Agreement is nevertheless still compatible. *See generally* Garro, *supra* note 119, at 456-458; Murray, *supra* note 80, at 23-26.

[136] For a further discussion of the issue of timing as it relates to the process of offer and acceptance by electronic messaging systems, see ELECTRONIC MESSAGING, *supra* note 1, at 10-13.

[137] Certain Document formats permit certain codes to be used which are defined to mean "cancellation"; however, in the absence of prior agreement or a course of dealing between the parties, the meaning of these codes in actual practice may be unclear.

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[138] For a discussion of the legal classification of facsimile communications as writings, see *infra* Part VI.B.1.b.

[139] RESTATEMENT (SECOND) OF CONTRACTS § 42 (1981). *See generally* 1 CORBIN, *supra* note 78, §§ 38-39; 1 WILLISTON, *supra* note 78, §§ 55-56.

[140] *See, e.g.*, MacNeil, *Time of Acceptance: Too Many Problems for a Single Rule*, 112 U. PA. L. REV. 947 (1964); Sharp, *Reflections on Contract*, 33 U. CHI. L. REV. 211 (1965). Note, however, that some commentators recognize virtues in the "mailbox" rule. *See, e.g.*, H. HUNTER, MODERN LAW OF CONTRACTS ¶16.03(1) (1986); J. CALAMARI & J. PERILLO, CONTRACTS §2-23 (1987); Llewellyn, *Our Case Law of Contract: Offer and Acceptance (Pt.2)*, 48 YALE L.J. 779 (1939).

[141] Although unlikely, parties could also condition validity on the proper receipt in return of an Acceptance Document. *See supra* notes 103 and 104 and accompanying text. It is interesting to note that, under CISG, *supra* note 26, the "receipt" principle is rejected in dealing with revocation, and a result similar to that under the Restatement is achieved. Article 16(1) provides: "Until a contract is concluded, an offer may be revoked if the revocation reaches the offeree before he has dispatched an acceptance." Professor Murray criticizes this result because it shifts back to the offeror a level of risk otherwise diminished by the provisions of CISG. Murray, *supra* note 80, at 28-29. If applied to international transactions, however, the Model Agreement would similarly correct the result Professor Murray criticized.

[142] Although the Model Agreement shifts the risk to the offeree, the offeree has within its power, by virtue of the obligation to verify receipt, the ability to verify receipt has occurred (and within any time frame applicable to the underlying contract). Hence, the capabilities of EDI, when combined with the provisions of the Model Agreement, seem to resolve a concern raised regarding the burden imposed upon an offeree under applicable international law. *See* CISG, *supra* note 26, art. 18(2); Murray, *supra* note 80, at 28.

3. *Garbled Transmissions*

Despite all technical solutions and procedures that may be established to assure that transmitted Documents are in an intelligible form, the possibility exists that communications could be received in which the data is garbled or unintelligible in some manner. The EDI agreements in use reviewed in the Study, with one or two exceptions, did not address this possibility. In evaluating the allocation of risk achieved by the Model Agreement, the Task Force determined that Section 2.2, requiring verification, needed further support. In the event a transmitted Document is unintelligible or garbled, a functional acknowledgement may not be possible (even if expected). To fairly divide the risks and the burdens of electronic commerce, the Task Force concluded that the receiving party should be encouraged to notify the originating party, although no obligation to do so seemed appropriate. Under the Model Agreement, if the originating party has transmitted the Document, but the receiving party has failed to provide notice of the garbled transmission, the originating party's records of the content of the Document shall control.[143] Of course, this provision is only relevant when the originating party may be identified from the garbled transmission; if total gibberish is transmitted, no responsibility to respond is imposed. The provision also applies only when no Acceptance Document has been specified; if an Acceptance Document is specified with respect to a Document that is garbled or unintelligible, there would be no obligation arising from such Document even if it was received.

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[143] *See* MODEL AGREEMENT, Section 2.4.

The term "unintelligible or garbled" is not intended to include Documents which, when formatted for human review, are capable of being read but which contain information which the receiving party knows, or has reason to know, may be incorrect.[144] Therefore, Section 2.4 is intended to apply only to unintelligible messages, incapable of having effective meaning, but which may be effectively traced to the originating party.

B. *Validity and Enforceability*

Concern regarding the validity and enforceability of contracts formed through the use of EDI has been a dominant factor in the legal discussion to date.[145] The EDI community has responded with interest to the question of whether EDI transactions, conducted in the absence of paper and conventional signatures, are rendered unenforceable by the Statute of Frauds[146] or otherwise fail to generate evidence acceptable under applicable law to prove the terms of any particular transaction. In constructing the Model Agreement, therefore, the Task Force established the essential objective of assuring, to the extent possible, that the use of EDI did not render the underlying commercial transactions legally invalid or unenforceable.[147] Although members of the Task Force were in disagreement over the degree to which the records of EDI transactions satisfy existing legal standards relating to enforceability, the Task Force unanimously believed that the Model Agreement, if implemented, will meet the above objective.

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[144] For example, if ABC has always ordered no more than 200 pencils, a purchase order for 200,000 pencils should not be considered unintelligible or garbled, since pursuant to Section 2.3 of the Model Agreement, trading partners can adopt a relationship where the receiver can always review, confirm or reject the substantive terms contained in any Document. In addition, even if the trading partners do not elect to require verification, there is adequate legal precedent within the law of mistake by which the sending party perhaps may be excused from being bound to the relevant Document. RESTATEMENT (SECOND) OF CONTRACTS § 153(b) (1981). *See generally* 3 A. CORBIN, CORBIN ON CONTRACTS §§ 608-12 (1960 & Supp. 1989) [hereinafter 3 CORBIN]); 13 S. WILLISTON, WILLISTON ON CONTRACTS §§ 1573, 1577-80 (3d ed. 1970).

[145] *See* ELECTRONIC MESSAGING, *supra* note 1, at 15. *See generally* Dziewit, Graziano & Daley, *The Quest for the Paperless Office--Electronic Contracting: State of the Art Possibility But Legal Impossibility?*, 5 SANTA CLARA COMPUTER & HIGH TECH. L.J. 75 (1989); *supra* note 19.

1. *The Statute of Frauds*

a. *Results of the Study*

Addressing the Statute of Frauds was the single most common characteristic of EDI agreements reviewed in the Study. Although not all agreements considered the issue, the agreements which did so took one or both of two approaches. First, several agreements adopted a "waiver strategy," setting forth, in one form or another, a waiver of the applicability of the Statute of Frauds. In some instances the agreements included a covenant to not assert a defense based upon the Statute of Frauds. Any claim that the failure of the content of EDI transmissions to be in writing and signed by the party to be charged would constitute such a defense. Second, and sometimes not exclusive of the former, agreements used a "definition strategy," providing that the EDI communications constituted "writings" which were to be considered "signed" by the parties. In many instances, the agreements specifically provided that the use of a user access code in conjunction with any transmission constituted a "signature" for the purposes of the Statute of Frauds.[148]

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[146] U.C.C. § 2-201 (relevant portions appear *infra* note 155).

[147] This objective is confirmed in the Recitals of the Model Agreement. *See also supra* text accompanying notes 34-36.

In the absence of an EDI agreement between trading partners, any requirement for written documentation was occasionally satisfied by the simple routine of promptly exchanging paper copies of the communications sent electronically. This practice satisfies concerns from a business, audit, or legal perspective regarding the elimination of paper, but eliminates many of the operational benefits which EDI may effectively accomplish.[149]

By far the most dominant response throughout the EDI community to the Statute of Frauds, however, is to implement the technology without any affirmative consideration, by trading partner agreement or otherwise, of the legal requirement of signed writings. Informal interviews conducted by members of the Task Force identified few EDI users, if any, who had done so on the advice of counsel that they could proceed to implement EDI freely without taking any steps to satisfy the Statute of Frauds. Yet users chose, whether aware of the Statute of Frauds issue or not, to implement EDI without any attempt to "satisfy" the writing requirements of applicable law.[150]

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[148] The Task Force concluded such an approach to the "signing" requirement to be ill-advised and inadequate. User identification or access codes are just that--electronic keys permitting access to the communication networks by which transmissions are exchanged (or, in some cases, to the EDI application program itself); however, obtaining access is a fundamentally different act than assenting to, or authenticating, the content of the transmissions themselves. For a further discussion of signatures, see *infra* notes 171-175 and accompanying text.

[149] *See supra* text accompanying note 39.

Regardless of whether those implementing EDI responded to the existence of the Statute of Frauds, the Study determined that the record retention practices of those participating in EDI are substantially uniform in many important respects.[151] As with most data processing activities, records of EDI communications are stored electronically, either internally on a computer (generally for short-term purposes) or on magnetic media, such as tapes or disks. Transaction records are usually maintained with respect to messages which are transmitted and messages which are received. The data may be retained and stored at differing points in the transmission or receipt process, and in differing formats, so that the record retained by the sender bears little resemblance to the record retained by the recipient.[152] In commercial practice, if the

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[150] The Statute of Frauds is not the exclusive requirement for a "writing" or "written agreements" within the Code. In Article 2 alone, there are 19 references to a "writing" or "written" notices or agreements. Hawkland & Maggs, *supra* note 109, at 89. In addition to contracts for the sale of goods, other types of documents are required by the Code to be in writing. *See, e.g.*, U.C.C. §§ 1-206 (sale of personal property), 2A-201(1)(b) (lease contracts), 3-104(1) (negotiable instruments), 5-104(1) (credits), 7-202(2) (warehouse receipts), 9-102(1) (security agreements).

[151] Companies may differ as to their regular retention procedures, and whether or not they apply to EDI. They may similarly differ on how long items are kept. Nonetheless, companies uniformly retain records of their EDI transactions.

[152] When a message is transmitted, the data is processed through one or more intermediate steps between the origination of a message and the electronic storage of the final form in which that message appears at the receiving end. This practice is best illustrated by an example.

ABC prepares a purchase order to be transmitted to XYZ. The original purchase order is prepared by a member of ABC's purchasing staff, using a computer terminal which displays various requests for information (such as XYZ's name, address, the goods being ordered, the quantity and so forth). ABC's computer, often using third-party software which has been acquired by ABC for this purpose, re-formats the information which has been provided into the particular data elements of the respective records of ABC and XYZ were to be compared, inconsistencies simply do not exist; the formats may differ but the data within the formats does not.[153]

b. *The Current Legal Environment*

Section 2-201 of the U.C.C., despite the level of scholarship and judicial interest in its provisions,[154] invites a relatively straightforward analysis when evaluating the use of a new communication technology. Section 2-201 requires that, in any contract for the sale of goods for $500 or more, there must be (1) a

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format required by the standard selected by ABC for transmitting electronic documents. (The use of third-party software becomes relevant to subsequent efforts to demonstrate the reliability of one's systems and procedures for evidentiary purposes. *See infra* Part VI.B.2. For a discussion of the use of standards in EDI, *see infra* Part VII.A.1.) An electronic copy of this particular message is first retained by ABC (in either the original format or the format in which such message is to be transmitted) and electronically transmitted by ABC to the Provider which has been mutually selected by ABC and XYZ. A few Providers permit EDI users to deliver them communications manually, on a disk or tape, but few users actually use this technique. The Provider re-transmits the message to XYZ (while perhaps retaining an electronic copy of the message in its own record retention system). XYZ's primary computer receives the message in the format of the selected standard; XYZ's main computer then re-formats the data into a format XYZ has defined for its own operational reasons. The record of the message, as received, may then be deleted from XYZ's computer; the record which is retained by XYZ reflects the data in the final format. XYZ's computer then processes the data through its application system.

Throughout this sequence, none of the data has been deleted and all the information contained in the original transmission has been forwarded; however, the record retained by XYZ may often bear no resemblance to the original transmission, a record of which was retained by ABC.

[153] It is significant testimony to the effectiveness and reliability of EDI that no one interviewed during the Study, including major EDI users, Providers and industry association representatives, could identify a single case where trading partners implementing EDI have commenced litigation based upon inconsistent records of the terms of any underlying contract.

[154] *See generally* WHITE & SUMMERS, *supra* note 113, §§ 2-1 to -12 and accompanying notes.

writing, (2) sufficient to indicate a contract was made, (3) signed by the party against whom enforcement is sought, and (4) containing a quantity term.[155] In evaluating transactions consummated through the use of EDI, the key questions are what constitutes a "writing" and what constitutes a "signature" for purposes of section 2-201.[156]

The practical effect of section 2-201 is limited by the exceptions contained within its terms.[157] The courts, not satisfied with the breadth of these statutory exceptions, have also crafted a variety of nonstatutory exceptions. These exceptions, some of which were established prior to the Code,[158] remain strategically important, when the statutory exceptions are inapplicable, to parties attempting to avoid the preclusive effect of the Statute of Frauds on contracts which are not evidenced by conventional signed writings.

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[155] U.C.C. § 2-201(1) provides, in relevant part:

> a contract for the sale of goods for the price of $500 or more is not enforceable by way of action or defense unless there is some writing sufficient to indicate that a contract for sale has been made between the parties and signed by the party against whom enforcement is sought or by his authorized agent or broker. A writing is not insufficient because it omits or incorrectly states a term agreed upon but the contract is not enforceable under this paragraph beyond the quantity of goods shown in such writing.

[156] It is important to recognize what § 2-201 does and does not accomplish. Its provisions are applicable only to contracts for the sale of goods; shipping contracts, financing agreements, re-insurance contracts and contracts for the delivery of services--all representing existing commercial uses of EDI--are outside the provisions of § 2-201. The Code applies the Statute of Frauds to modifications of agreements which are within the provisions of § 2-201 in the first instance. *See* U.C.C. § 2-209.

The extent of use of EDI for service relationships has not yet been quantified. With regard to mixed contracts for goods and services, the question of the applicability of § 2-201 remains unanswered without any controlling precedents. *See generally* 2 A. CORBIN, CORBIN ON CONTRACTS § 476 (1950) [hereinafter 2 CORBIN]; WHITE & SUMMERS, *supra* note 113, § 2-2, at 73. Contracts for the sale of personal property not constituting "goods" are also outside its scope; U.C.C. § 1-206(1) applies in those instances. *See* Note, *The Uniform Commercial Code, § 1-206--A New Departure in the Statute of Frauds?*, 70 YALE L.J. 603 (1961).

[157] The exceptions are set forth within the provisions of U.C.C. § 2-201: (a) in the event a party sends a signed confirmatory writing to the other party, sufficient to satisfy § 2-201(1), such writing is acceptable against the receiving party if that party has "reason to know its contents" and does not object to those contents within 10 days of receipt (§ 2-201(2)); (b) where the seller significantly relies on an oral contract to manufacture special goods for the buyer (§ 2-201(3)(a)); (c) where a party admits in its pleadings, testimony or otherwise in court that a contract for sale was made (§ 2-201(3)(b)); and (d) where payment has been made and accepted or where goods have been received and accepted (§ 2-201(3)(c)).

The nonstatutory exception most often recognized by the courts results from the application of the doctrine of estoppel. The doctrine is not necessarily easy to demonstrate; a plaintiff attempting to prevail over a defendant's assertion of the Statute of Frauds must demonstrate that (a) a promise to perform was made by the defendant, (b) the plaintiff reasonably relied on the promise and (c) some type of unconscionable injury or unjust enrichment must result from a refusal to enforce the underlying contract.[159] Although many courts have used an estoppel theory to circumvent the requirement of the Statute of Frauds, and the Restatement specifically allows the assertion of estoppel for this purpose,[160] not all courts recognize it as an effective tool for avoiding the effect of section 2-201.[161]

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[158] For a discussion of pre-Code exceptions, see generally WHITE & SUMMERS, *supra* note 113, § 2-3.

[159] *See id.* § 2-6 (and cases cited therein). *See also infra* note 161. Formulations of the doctrine differ. *See, e.g.*, RESTATEMENT (SECOND) OF CONTRACTS § 139 (1981) (unjust enrichment not required); A. FARNSWORTH, CONTRACTS § 6.12 (1972).

[160] RESTATEMENT (SECOND) OF CONTRACTS § 139 (1981).

Although there has been debate as to whether the Statute of Frauds represents substantive law, the essential function is to bar proof that a contract has been made unless a sufficient writing exists.[162] Section 2-201 does not govern contract formation; it simply requires a signed writing which is "sufficient to indicate a contract for sale has been made between the parties". The terms of that contract, beyond the quantity of goods, need not be reflected by the "writing."[163] If the party attempting to prove the contract cannot introduce into evidence an acceptable signed writing, section 2-201 (in the absence of an applicable statutory or nonstatutory exception) prevents enforcement. Therefore, as noted earlier, what constitutes a "writing" and what constitutes a "signature" become the critical inquiries in evaluating a new medium of communication and assessing the acceptability of the resulting transaction records under the Statute of Frauds. In this regard, the Code's corresponding definitions are important.

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[161] The availability of the estoppel doctrine often focuses upon the question of whether U.C.C. § 2-201 operates to displace the law relative to estoppel which would otherwise supplement the provisions of the Code pursuant to U.C.C. § 1-103. A very recent decision to consider the question, indeed, saw the matter as one of first impression under the law of the Commonwealth of Pennsylvania and denied the availability of the estoppel doctrine as a means around the preclusive result under § 2-201. International Prods. & Technologies, Inc. v. Iomega Corp., 1989 WL 138866 (E.D. Pa. 1989). Other recent cases include Renfroe v. Ladd, 701 S.W.2d 148, 149, 42 U.C.C. Rep. Serv. 547, 548 (Ky. Ct. App. 1985) ("Appellants' interposition of equitable estoppel as a bulwark against the statute of frauds is of no avail"); Lige Dickson Co. v. Union Oil Co., 96 Wash. 2d 291, 299, 635 P.2d 103, 107, 32 U.C.C. Rep. Serv. 705, 710 (1981) ("Nonetheless, we must hold that promissory estoppel cannot be used to overcome the statute of frauds in a case which involves the sale of goods"). *But see* Allen M. Campbell Co. v. Virginia Metal Indus., 708 F.2d 930, 36 U.C.C. Rep. Serv. 384 (4th Cir. 1983) (promissory estoppel permitted as exception to statute of frauds); R. S. Bennett & Co. v. Economy Mechanical Indus., 606 F.2d 182, 27 U.C.C. Rep. Serv. 345 (7th Cir. 1979) (same); Warden & Lee Elevator, Inc. v. Britten, 274 N.W.2d 339, 25 U.C.C. Rep. Serv. 963 (Iowa 1979) (same). Even White and Summers disagree as to the availability of estoppel as a nonstatutory exception. WHITE & SUMMERS, *supra* note 113, § 2-7, at 97.

[162] *A. FARNSWORTH, NEW YORK LAW REVISION COMM'N REP.* RECOMMENDATIONS AND STUDIES 259-60 (1960) ("the justification of a statute of frauds as to the sale of goods must be today, just as it was in the time of its origin in 1677, its evidentiary function, the prevention of fraudulent claims"). *See also* WHITE & SUMMERS, *supra* note 113, § 2-3, at 79; Lowry, *Does Computer Stored Data Constitute a Writing for the Purpose of the Statute of Frauds and the Statute of Wills?*, 9 RUTGERS COMPUTER & TECH. L. J. 93 (1982).

U.C.C. section 1-201(46) defines a "writing" to include "printing, typewriting or any other intentional reduction to tangible form." Prior to the introduction of electronic technology, the law rarely questioned the medium upon which the writing was presented.[164] The introduction of the telegram and the telex, both involving the communication of a series of electrical impulses, did not present an insurmountable difficulty to the courts in concluding that a sufficient writing existed.[165] In effect, the fact that the receiving party obtained a piece of paper as the resulting product of the communication was sufficient; the acceptability of that paper as tangible evidence of the contract, more reliable than the oral statements of witnesses, was therefore established.[166] At least one court has also accepted a tape recording as an adequate "writing," where both parties knew the tape was being made to record their discussion.[167] In recent decisions under the Statute of Frauds, where the writing in question consisted of a telecopy, the courts have accepted the telecopy as a "writing" without questioning that result.[168]

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[163] U.C.C. § 2-201 Official Comment 1 ("all that is required is that the writing afford a basis for believing that the offered oral evidence rests on a real transaction").

[164] *See, e.g.*, *In re* Goods of Barnes, 136 L.T.R. 380, 164 L. T. 328, 43 T.L.R. 71 (1926) (will written on eggshell); A Microscopic Will, 66 Sol. J. 638 (1922) (will written on a microscopically etched Navy identification disk); V. HARRIS, ANCIENT, CURIOUS, AND FAMOUS WILLS 167, 168 (1911) (wills written on a door, a card torn from a freight car, wrapping paper and a collar box lid); Miller, *Notes on Some Interesting Wills*, 12 MICH. L. REV. 467, 468 (1914) (wills written on a corn bin and a bedpost); Sellers, *Strange Wills*, 28 J. CRIM. L. & CRIMINOLOGY 106 (1937-38) (wills written on the rung of a stepladder, matchbox and petticoat); Note, *Wills--Writing Scratched on a Tractor Fender--Granting of Probate*, 26 CANADIAN B. REV. 1242 (1948) (will written on a tractor fender).

[165] *See generally* 4 S. WILLISTON, WILLISTON ON CONTRACTS § 568 (3d ed. 1961) [hereinafter 4 WILLISTON]; 2 CORBIN, *supra* note 156, § 508; *see also infra* notes 166 & 171.

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[166] In Selma Sav. Bank v. Webster County Bank, 182 Ky. 604, 206 S.W. 370 (1918), the court accepted a telegram, the content of which had been orally provided to Western Union by telephone, as a signed writing effective as an acceptance of a negotiable instrument, having recognized that, in fact, the initiating party had not actually transmitted or provided a physical piece of paper. The court quoted Howley v. Whipple, 48 N.H. 487 (1869) as follows:

> When a contract is made by telegraph . . it makes no difference whether the operator writes the offer or the acceptance in the presence of his principal and by his express direction, with a steel pen an inch long attached to an ordinary penholder, or whether his pen be a copper wire a thousand miles long. . . . [n]or does it make any difference that in one case common record ink is used, while in the other case a more subtle fluid, known as electricity, performs the same office.

See also Lowry, *supra* note 162, at 100-01.

Additional cases have upheld telex communications as satisfactory under the Statute of Frauds, either as original writings or confirmatory memoranda. *See, e.g.*, Simmons Oil Corp. v. Bulk Sales Corp., 498 F. Supp 457, 31 U.C.C. Rep. Serv. 1236 (D.C.N.J. 1980); Franklin County Coop. v. MFC Servs., 441 S.2d 1376, 37 U.C.C. Rep. Serv. 1465 (Miss. 1983); Hideca Petroleum Corp. v. Tampimex Oil Int'l, Ltd., 740 S.W.2d 838 (Tex. Ct. App. 1987).

[167] Ellis Canning Co. v. Bernstein, 348 F. Supp. 1212, 11 U.C.C. Rep. Serv. 443 (D. Col. 1972). *See also* Londono v. City of Gainesville, 768 F.2d 1223 (11th Cir. 1985) (tape recording satisfies Florida statute of frauds). *See generally* Misner, *Tape Recordings, Business Transactions Via Telephone and the Statute of Frauds*, 61 IOWA L. REV. 941 (1976). *But see* Sonders v. Roosevelt, 64 N.Y.2d 869, 476 N.E.2d 996, 487 N.Y.S.2d 551 (1985) (rejecting a tape recording as a "writing"); Roos v. Aloi, 127 Misc. 2d 864, 487 N.Y.S.2d 637, 41 U.C.C. Rep. Serv. 971 (Sup. Ct. 1985) (same); Swink & Co. v. Carroll McEntee & McGinley, Inc., 266 Ark. 279, 584 S.W.2d 393, 27 U.C.C. Rep. Serv. 239 (1979) (accepting a tape recording on the condition that it be manually signed).

The comparability of EDI to these other technologies is of interest. With telegrams, the originating party submits a writing on paper to the telegraph company; however, telegrams can also be initiated by telephone.[169] Telecopiers (or "facsimile" or "fax" machines) have generally required an original paper document at the originating end of a transmission; however, computer software has now been developed which allows a computer, when instructed by an operator, to automatically connect to a receiving telecopier and send a message directly, without requiring an original paper document. The receiving telecopier, responding to the sequence of electrical impulses received, prints a paper copy of the transmission which will appear as if an original paper document exists, including such details as letterhead and manual signatures, when in fact there is no original paper document. Telex is similar; the original message is keyed into the machine directly (having been received in oral or written form from the sender) and results in a paper record of the message at the receiving machine. With EDI, there normally is no originating paper document; the message is formatted on a terminal by an operator or automatically by a computer; and the receiving party may then do a number of things, including printing out the message on paper. The data may be automatically re-formatted to be human-readable or to be in accordance with the format of existing paper documents used by the receiving party.

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[168] *See* International Prods. & Technologies, Inc. v. Iomega Corp., 1989 U.S. Dist. LEXIS 13589 (E.D. Pa. 1989); Bazak Int'l Corp. v. Mast Indus., Inc., 73 N.Y.2d 113, 535 N.E.2d 633, 538 N.Y.S.2d 503, 7 U.C.C. Rep. Serv. 2d 1380 (1989). *See also* American Multimedia, Inc. v. Dalton Packaging, Inc., 143 Misc. 2d 295, 540 N.Y.S.2d 410 (Sup. Ct. 1989) (accepting a purchase order sent by telecopy as a written arbitration agreement under federal law on arbitration, 9 U.S.C. §§ 1-14 (1982)); Calabrese v. Springer Personnel of New York, Inc., 141 Misc. 2d 566, 534 N.Y.S.2d 83 (1988) (permitting service of papers through facsimile machine).

[169] *See Selma*, 182 Ky. 604, 206 S.W. 870; Joseph Denunzio Fruit Co. v. Crane, 79 F. Supp. 117 (S.D. Cal. 1948), *vacated*, 89 F. Supp. 962 (1950), *reinstated*, 188 F.2d 569 (9th Cir.), *cert. denied*, 342 U.S. 820 (1951), *cert. denied*, 344 U.S. 829 (1952). *See also* U.C.C. § 1-201(41) (defining "telegram" to include a message transmitted by "any mechanical method of transmission or the like").

Telegrams, telexes, telecopies and EDI, therefore, are inherently similar; all involve the transmission of a message by a series of electronic impulses. The message on which the transmission is based may, but need not, be in writing. Telegrams, telexes and telecopies do differ from EDI in that their transmissions always result in a writing, whereas whether an EDI transmission results in a printout depends upon whether the receiver desires one. The important point, from the Statute of Frauds perspective, is that EDI has the capacity to produce the writing on request. Telegrams, telexes and telecopies differ from EDI documents in that the end result of their electronic transmission is designed to be a paper-based writing. An EDI document transmission is more versatile. It may result in a paper-based writing (a printout) or may be stored in magnetic or other non-paper media at the option of the receiver. Telegrams, telexes and telecopies have all been accepted as offering circumstantial guaranties of trustworthiness which are equivalent to those which a writing (in the more conventional pencil and paper sense) provide. A similar result with respect to EDI (assuming reliable record retention procedures are in place) should not be unexpected. As demonstrated by the above analysis (and by the extent to which EDI is supplanting the other writings), the records of EDI transactions reflect a potential for reliability and accuracy that is, at the least, equivalent to the records maintained with regard to the use of the other technologies. The records are retained on a form of media (magnetic tapes or disks) which are identical to the type of media used to record oral conversations, a form which has been accepted as a "writing" in other instances. This message, however stored, constitutes objective, corroborating evidence, apart from the oral testimony of the parties, which demonstrates the possible existence of a contract. Thus, the evidentiary purpose of the writing requirement is met.[170]

U.C.C. section 1-201(39) defines "signed" to include "any symbol executed or adopted by a party with present intention to authenticate a writing." The adoption of new technologies has challenged the courts to find an adequate signature. The telegram and telex cases have consistently concluded an adequate signature existed.[171] In the tape recording cases, whether a "signature" existed, reflecting the requisite intent of the parties to authenticate the "writing," seemed to be a function of whether the parties had knowledge that the recording was being made. Where such knowledge was not present, the court concluded no signature existed.[172] With EDI, the act of initiating the transmission of a message is comparable to transmission by telegrams, telexes and telecopies. In all instances, a message is composed (either manually or by computer application) and the message is entered for transmission.[173] The transmitted messages similarly contain information identifying the source of the message either in the text of the message itself or in circumstances surrounding its transmissions.[174] In most cases, it will be reasonable to conclude that the initiating party used an identifying symbol affixed to or contained in the message with the requisite present intention to authenticate the writing in accordance with the Code.[175]

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[170] *See* RESTATEMENT (SECOND) OF CONTRACTS § 65 comment a (1981). In evaluating the reasonableness of a medium of acceptance, "the concept of reasonableness is flexible, and its applicability may be enlarged as new media develop or existing media become more speedy or reliable or come into more general use." *Id.* § 65 comment b. There apparently exist no decisions on which to rely. As of December 20, 1989, a LEXIS search of all cases in the federal and state courts revealed no citations to cases containing the terms "electronic data interchange," "EDI" or "electronic mail."

The Securities and Exchange Commission has adopted a temporary rule interpreting the "written" requirement of the Securities Act, 15 U.S.C. § 77(b)(9) (1982), which includes "any means of graphic communication," to include electronically formatted documents. EDGAR Temporary Rule, 17 CFR § 230.499(b)(3) (1989). In connection with the EDGAR program, see generally Langevoort, *Information Technology and the Structure of Securities Regulation*, 98 HARV. L. REV. 747, 765-768 (1985).

Interestingly, CISG, *supra* note 26, article 13 provides that a "writing" includes a telegram and telex. This definition is generally understood to supplement article 21(2) ("letter or other writing containing a late acceptance") and article 29(2) (if so provided, written contract may only be modified or terminated in writing) and does not otherwise modify the provisions of article 11 (contracts not subject to any requirements as to form) or article 27 (notice, request or communication may be given or made by any means appropriate in the circumstances). J. HONNOLD, UNIFORM LAW FOR INTERNATIONAL SALES UNDER THE 1980 UNITED NATIONS CONVENTION § 130, at 157 (1987).

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[171] *Joseph Denunzio*, 79 F. Supp. 117; *Selma*, 182 Ky. 604, 206 S.W. 870; 2 CORBIN, *supra* note 156, § 508; 4 WILLISTON, *supra* note 165, § 568. In the one telecopier case involving the adequacy of the signed writing, the court accepted the paper printout of the transmission as an acceptable signed writing without any indication that an original document existed. *Bazak*, 73 N.Y.2d 113, 535 N.E.2d 633, 538 N.Y.S.2d 503, 7 U.C.C. Rep. Serv. 2d 1380.

[172] *Compare Ellis*, 348 F. Supp. 1212 (where the requisite knowledge existed) *with Swink*, 266 Ark. 279, 584 S.W.2d 393, 27 U.C.C. Rep. Serv. 239 (where such knowledge did not exist; however, the court did not provide an explanation of its conclusion that no signature existed). *See also* Lowry, *supra* note 162, at 101-102.

[173] In the case of "automatic" contracting, *see supra* Part IV, the EDI composition and entry process occurs by virtue of the application programs that have been written. However, by writing and installing such programs, the sender's conduct is nevertheless comparable--he remains in control of the transmission and the content.

[174] Most commercial telecopiers receiving transmissions, if the originating party elects, will imprint the date, name of the originating party and the phone number from which the message was transmitted upon the paper document at the receiving end. With EDI, the name of the originating party is generally contained in the electronic "envelope" in which individual messages are collected and transmitted and is often a data element of the particular message.

In analyzing EDI commercial practices, therefore, the issue is whether the records of EDI communications, which are increasingly relied upon by businesses themselves, are acceptable within the "signed writing" concepts of the Code and related case law.[176] Alternatively, in light of the repetitive nature of the use of EDI to complete commercial transactions and the mutual efforts of trading partners required to structure and maintain appropriate communication systems and security procedures, the issue may be whether either trading partner may be estopped from asserting the Statute of Frauds against the other to avoid the enforcement of any underlying contract for the sale of goods. Several members of the Task Force were reasonably confident the Statute of Frauds would not, under either analysis, preclude enforcement.[177]

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[175] U.C.C. § 1-201 Official Comment 39 provides that the key question in what constitutes a "signature" is "whether the symbol was executed or adopted by the party with present intention to authenticate the writing." A variety of things may suffice, such as initials, stamps, thumbprints and letterheads. A court is instructed to "use common sense and commercial experience in passing upon these matters." *Id.* Whether the imprint or "envelope" identification is acceptable therefore will require a finding on a case-by-case basis of the requisite intent. The use of electronic signatures introduces an issue as to whether these symbols have adequate characteristics to evidence the identity of the signatory. For a discussion of the comparative "forensic" aspects of certain signatures, see *infra* note 187.

[176] The issue is not the sufficiency of the content of EDI "Documents" to indicate the existence of a contract for sale. Not all EDI Documents will be "sufficient to indicate a contract was made" as required by U.C.C. § 2-201. A purchase order acknowledgement containing all required data elements will more likely be sufficient than a functional acknowledgement relating to the initial purchase order. However, a purchase order is generally not recognized as sufficient, in itself, to satisfy the requirements of § 2-201, particularly as a confirmation under U.C.C. § 2-201(2). *See, e.g.*, Norminjil Sportswear Corp. v. T G & Y Stores Co., 644 F. Supp. 1 (S.D.N.Y. 1985); Trilco Terminal v. Prebilt Corp., 167 N.J. Super. 449, 400 A.2d 1237, 26 U.C.C. Rep. Serv. 616 (Law Div. 1979), *aff'd*, 174 N.J. Super. 24, 415 A.2d 356 (App. Div. 1980); Howard Constr. Co. v. Jeff-Cole Quarries, Inc., 669 S.W.2d 221, 227-228, 37 U.C.C. Rep. Serv. 1040, 1050 (Mo. Ct. App. 1983). *See also* WHITE & SUMMERS, *supra* note 113, § 2-5.

Whether the Statute of Frauds, as set forth in U.C.C. section 2-201, will remain a part of commercial law is increasingly uncertain. Great Britain repealed the original statute in 1954.[178] International commercial law does not require a signed writing to evidence a contract for the sale of goods.[179] There is growing accommodation, in areas of the law unrelated to traditional Statute of Frauds considerations, to the acceptability of electronically transmitted material.[180] In addition, the rules of evidence which often interact with the Statute of Frauds have been revised in recent years to accommodate the admissibility of business records maintained by computer, records which are comparable in many respects to the type of records resulting from EDI transactions.[181] The repeal in the United States of the Statute of Frauds, indeed, is a distinct possibility.[182]

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[177] The two "problematic" requirements of the Statute of Frauds of § 2-201(1) would appear to be satisfied by EDI transmissions. First, despite the absence of a piece of paper as the mode of transmission, a piece of paper (such as a printout of the transaction) may be generated at some point, even if after a controversy arises. This paper document should be sufficient to indicate a contract was made; the fact it was printed out later (except to the extent that intervening events, such as storage and retrieval, might affect its evidentiary value) should be irrelevant. *See* Crabtree v. Elizabeth Arden Sales Corp., 305 N.Y. 48, 110 N.E.2d 551 (1953) (payroll cards and salary memo prepared after formation of oral contract satisfied Statute of Frauds). Thus, if paper is seen as critical, some can be generated. More importantly, however, the paper itself is merely a tangible embodiment of a message reliably and accurately transmitted and electronically stored. *See* note 170 and accompanying text.

Second, the electronic transmission will undoubtedly include a name, access code or other identifier which not only documents the source of the transmission, but also evidences an intent on the part of the sender to authenticate the transmission, thus satisfying the signing requirement of U.C.C. §§ 1-201(39) and 2-201. Obviously, the more unique or sophisticated the "signature" used the stronger the inference of intent to authenticate, primarily because the more unique or sophisticated the signature, the less possibility of fraud in the transmission of the message. It should be noted, however, that the signing requirements of U.C.C. §§ 1-201(39) and 2-201, as drafted and as interpreted, are minimal: a signature produced by a facsimile machine or a piece of letterhead is sufficient to satisfy the signing requirement for Statute of Frauds purposes without any demonstration of controls or security surrounding access to or use of facsimile machines or letterhead. Allegations that use of a letterhead or facsimile machine were unauthorized, however, go not to whether the Statute of Frauds is satisfied, but to whether in fact the contract was ever entered into as alleged.

Apart from satisfying the technical writing and signature requirements of the Statute of Frauds, the course of conduct in which EDI trading partners engage, even in the absence of agreements governing their use of EDI, may also satisfy the elements of the estoppel doctrine. In Gooch v. Farmers Mktg. Assoc., 519 So.2d 1214, 5 U.C.C. Rep. Serv. 2d 934 (Miss. 1988), the contracting parties established a course of performance pursuant to which oral contracts were recognized to exist in the absence of signed contracts, resulting in a finding that enforceable contracts arose from oral agreements, the Statute of Frauds notwithstanding.

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[178] *See* Decker, *The Repeal of the Statute of Frauds in England*, 11 AM. BUS. L.J. 55 (1973).

[179] *See* CISG, *supra* note 26, art. 11 ("a contract of sale need not be concluded in or evidenced by writing and . . . may be proved by any means"). Article 12 permits any country ratifying CISG to make a declaration to exclude itself from the provisions of article 11; however, the United States of America did not make that declaration in ratifying CISG. 52 Fed. Reg. 6262-02 (Mar. 2, 1987); Note by the Secretary-General, Status of Conventions, U.N. Doc. A/CN.9/325, at 4 (May 17, 1989). Interestingly, the availability of this opt-out provision was not a function of American participation in the development of the Convention, but rather a function of the participation of the Soviet representatives. *See* Garro, *supra* note 119, at 461.

[180] *See, e.g.*, *In re* Changes to the Ark. Rules of Civil Proc., 1989 WL 143514 (Ark.) (permitting service by electronic transmission where the receiving attorney maintains equipment capable of reproducing verbatim electronic transmission); Madden v. Hegadorn, 236 N.J. Super. 280, 565 A.2d 725 (1989) (permitting a candidate to submit a signature of candidacy by telecopy, where there was no evidence of fraud or wrongdoing); Blackburn v. City of Paducah, 441 S.W.2d 395, 398 (Ky. 1969) (a resignation by a public official sent by telegram was determined to constitute an adequate writing under applicable law requiring such resignations to be in writing; the court observed that the official, who telephoned the message to the telegraph office, had "authorized his signature thereto"); State v. Watts, 289 N.C. 445, 222 S.E.2d 389 (1976) (upholding mechanical reproduction of the signature of a public official). *See also supra* note 170.

c. *The Response of the Model Agreement*

The Task Force concluded, that the Model Agreement should be responsive to the existence of section 2-201 for several reasons. First, the Study identified an enormous level of interest in the Statute of Frauds question and pressure within the EDI community to accommodate risk-averse management philosophies. The Model Agreement, therefore, offered itself as an excellent vehicle to be responsive to the pragmatic concerns of those implementing EDI. Second, the Task Force believed that the Model Agreement could effectively respond, as an example, to inconsistencies and shortcomings identified in the Study and to the approaches taken by existing commercial EDI agreements.

As discussed earlier, the Task Force concluded that the commercial use of the Model Agreement to assure the efficacy of EDI commercial transactions was consistent with and in furtherance of the fundamental purposes of the Code, including permitting the continued expansion of commercial practices through custom, usage and agreement of the parties.[183] Thus, an agreement between trading partners represents an appropriate mechanism readily accommodated by the Code to affirmatively address concerns regarding signed writings. The Model Agreement implements several strategies in response.

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[181] *See* FED. R. EVID. 802, 803(6), 1001(1), 1001(3), 1002; *infra* Part VI.B.2. *See also* Federal Business Records Act, 28 U.S.C. § 1732 (1982) (admissibility of computer records).

[182] The Permanent Editorial Board established a Study Committee to study the possible revision of Article 2 in 1988. In December 1989, the members of the Study Committee recommended that U.C.C. § 2-201 be repealed; its final report is expected in late 1990. Whether the Permanent Editorial Board chooses to establish a drafting committee and whether the recommendations of the Study Committee are actually implemented, remains to be seen. For a recent discussion of the weaknesses of the Statute of Frauds in the context of transactions involving real estate, see Braunstein, *Remedy, Reason, and the Statute of Frauds: A Critical Economic Analysis*, 1989 UTAH L. REV. 383.

With respect to "writing" issues relating to letters of credit, see Task Force on the Study of U.C.C. Article 5, *Problems under U.C.C. Article 5 (Letters of Credit)*, _ BUS. LAW. [22-23] (1990) (discussing the meaning of "document"); *id.* at [33] (discussing the meaning of "signed writing"); *id.* at [35-37] (discussing the time and effect of establishing credits). *See also* Merges & Reynolds, *Toward a Computerized System for Negotiating Ocean Bills of Lading*, 6 J. L. & COM. 23 (1986); INTERNATIONAL CHAMBER OF COMMERCE, UNIFORM CUSTOMS AND PRACTICE FOR DOCUMENTARY CREDITS art. 12 (Pub. No. 400, 1983) (permitting letters of credit in electronic form).

First, the Model Agreement adopts and expands upon the "definition strategy" used in several existing agreements reviewed in the Study. Any Document which has been properly transmitted pursuant to the terms of the Model Agreement is defined to be a "writing" or "in writing."[184] This expanded concept of a "writing" which includes EDI transmissions is applicable in connection with any purchase and sales transaction (defined as a "Transaction" in the Recitals of the Model Agreement), any master or other independent purchasing agreement for which EDI is being used and any application of the provisions of the Model Agreement.[185] In addition, the Model Agreement defines a "signature" as any identification consisting of symbols or codes which are adopted by a party and electronically affixed to or contained in Documents transmitted by such party.[186] When so affixed or contained, any such Signature is expressly accepted by such party as sufficient to verify that such party originated the related Document.[187] The Model Agreement then combines the "writing" and "signature" concepts and provides that any "writing" containing, or to which there is affixed, a "Signature" (defined as a "Signed Document") shall be deemed for all purposes (a) to be "signed" and (b) to constitute an "original" when printed from electronic files or records established and maintained in the normal course of business.[188] Thus, a properly transmitted Document reflecting the Signature of the transmitting party should be sufficient to satisfy the formal requirements of the Statute of Frauds as well as any other legal requirement for a "writing," whether or not supplemented by a signature requirement.[189]

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[183] *See supra* notes 57-59 and accompanying text.

[184] MODEL AGREEMENT, Section 3.3.2. For the meaning of "properly transmitted," see *id.*, Section 2.2 Comment 3.

[185] *Id.* Section 3.3.2. This last element is of particular significance. The Model Agreement provides for a "writing" or "written agreement." *See id.*, Sections 1.1, 4.1. Working drafts of the Model Agreement prompted inquiries as to whether an electronic transmission would satisfy the requirement of the Model Agreement for a "writing." The Agreement, in fact, provides the flexibility to allow notices, modifications, amendments or other communications required or permitted by the Agreement to be "in writing" to consist of electronic transmissions, but only if the transmissions satisfy the criteria of the Model Agreement for "Signed Documents" (as defined in Section 3.3.2). The technology exists for the parties to specify in the Appendix certain Documents which permit "free text" and to perhaps specify the uses for such Documents. *See supra* note 113.

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[186] MODEL AGREEMENT, Section 1.5.

[187] *Id.* The Signature adopted by each party serves to authenticate the related electronic transmission, confirming the intent of the sending party to be bound by the content of the message. *See* U.C.C. § 1-201 Official Comment 39. In addition, a Signature may serve an additional function of facilitating security procedures. Further discussion of this interaction appears at MODEL AGREEMENT, Section 1.5 Comments 2, 3.

The Task Force considered, and rejected, a suggestion that trading partners be required to periodically change the Signature which they adopt. As a security procedure, frequently revising these codes is a recommended practice. However, the Task Force considered the provisions of Section 1.4 of the Model Agreement to be adequate; if periodically changing one's Signature is reasonable as a security procedure, or is otherwise determined by the trading partners to be appropriate, Section 1.4 would have the same operative effect as the suggested provision.

The Signature of a party should be separate and distinct from any user identification or access codes implemented to facilitate communication. *See supra* note 148 and accompanying text. By providing that the Signature be affixed to, or contained in, any Document, the Model Agreement requires that one must look to the content of the communication itself to find the Signature. Generally, the format requirements of most standards include the use of electronic "envelopes" which contain information identifying the originating party. Thus, the "envelope," which is transmitted with the Document, may contain the requisite Signature.

The use of electronic signatures is technologically available, and when taken together with the use of reasonable security procedures (including those required by the Model Agreement; *see* MODEL AGREEMENT, Section 1.4; *infra* Part VII.D), would appear to provide a reasonable basis to conclude that the transmitting party was the originator and that the originator had the required intention to authenticate the Document pursuant to U.C.C. § 1-201(39). At present, the best electronic "signature," no matter how complicated, is ultimately an electronic code. By comparison, certain conventional signatures arguably possess characteristics which provide some "forensic" evidence as to the identity of the signatory. Electronic signatures used commercially, until recently, may lack comparable characteristics. However, technology has been recently introduced for communicating an electronic signature with unique characteristics. For a discussion of the comparative qualities of conventional and electronic signatures, see Baum, *supra* note 19, at 124-126; Y. POULLET & G.P.V. VANDENBERGHE, *supra* note 69, at 62-67.

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[188] MODEL AGREEMENT, Section 3.3.2.

[189] Such legal requirements are intended to be satisfied by the transmitted Document itself, regardless of the medium by which the record of that transmission is established and maintained or whether such record is presented in printed form or otherwise. However, the need for effective record retention practices remains. *See infra* Part VI.B.2. Similarly, Signed Documents, as transmitted, should satisfy any legal requirement that any writing be "signed." In order to satisfy any "writing" or "signed" requirement, the Model Agreement does not establish as a prerequisite that the Document be printed from electronic files or records established and maintained in the normal course of business. Those prerequisites are of significance only to the admissibility of the printed record under applicable rules of evidence. FED. R. EVID. 1001(3). *See infra* Part VI.B.2.

There remains, in the absence of a printed record of a Document, the burden of demonstrating that the Document had been transmitted and contained the appropriate content (including any Signature), but that is an issue of proof and not of contract. *See, e.g.*, Selma Sav. Bank v. Webster County Bank, 182 Ky. 604, 607-08, 206 S.W. 870, 871 (1918). Note that any "writing" sent under the Model Agreement will have no effect until properly received. *See supra* Part VI.A.1.

The impact of the Model Agreement's disposition of the "writing" issue under the Code cannot be underestimated. Article 2 of the Code contains requirements for writings which are varied in their scope and breadth. *See supra* note 150. To the extent the Model Agreement provides that a properly transmitted Document shall be considered to be "in writing" in connection with any Transaction (as defined in the Recitals of the MODEL AGREEMENT), and the parties were to specify unrestricted use of "free text" in the Appendix, the full capability of EDI to change commercial practices governed by Article 2 would be realized.

Defining properly transmitted Documents as "writings" also permits their content to be integrated with the provisions of other writings, both those on paper or otherwise retained, for the purpose of satisfying the statutory threshhold of sufficiency articulated in U.C.C. § 2-201. *See* Jennings v. Ruidoso Racing Association, 441 P.2d 42 (1968); Leach v. Crucible Center Co., 388 F.2d 176 (1st Cir. 1968); 2 CORBIN, *supra* note 156, § 512; WHITE & SUMMERS, *supra* note 113, §3-3; *supra* notes 21-22 (cases cited). The Model Agreement in fact contemplates that Documents electronically transmitted may not express the complete terms of any underlying contract. *See* MODEL AGREEMENT, Sections 3.1, 3.3.1. However, the Model Agreement (or any similar EDI agreement) does not constitute a requirements or outputs contract under U.C.C. § 2-306.

Although the Model Agreement does not obligate either party to enter into any sales transactions (*see* MODEL AGREEMENT, Section 4.3 & Comment 3), the Model Agreement

Second, the Model Agreement expressly provides that the conduct of the parties pursuant to its terms shall evidence a course of dealing and a course of performance which has been accepted by the parties in furtherance of the Model Agreement, any Transaction and any other written purchasing agreement to which the Model Agreement relates.[190] Such conduct includes identification of the Documents to be transmitted, the establishment of channels of communication to facilitate EDI and the adoption of appropriate security procedures,

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may itself be considered as a writing, to be combined with other writings, to evidence the existence of a contract for the sale and purchase of goods. *See* A. FARNSWORTH, *supra* note 159, § 6.8, at 417, providing that "[i]t is enough that a sufficient connection between the papers is established simply by a reference in them to the same subject matter or transaction" (quoting Crabtree v. Elizabeth Arden Sales Corp., 305 N.Y. 48, 55, 110 N.E.2d 551, 553-54 (1953)). As Judge Cardozo stated in Marks v. Cowdin, 226 N.Y. 138, 145, 123 N.E. 139, 141 (1919), "[t]he memorandum exacted by the statute . . . may be pieced together out of separate writings, connected with one another either expressly or by the internal evidence of subject matter and occasion." *See also* U.C.C. § 2-204(1), which provides that "(1) A contract for sale of goods may be made in any manner sufficient to show agreement, including conduct by both parties which recognizes the existence of such a contract." Accordingly, subsequent EDI communications, based upon earlier exchanges of Documents, may also be probative evidence of the existence of a contract.

[190] MODEL AGREEMENT, Section 3.3.3 & Comment 5.

all of which are required by the Model Agreement.[191] As a course of dealing, the conduct of the parties, though preceding any particular Transaction, may be considered in interpreting the contract for such transaction.[192] As a course of performance, the conduct of the parties pursuant to the Model Agreement may serve as a basis for resolving any uncertainties regarding the existence of an intent for a contract to be formed, as well as any contradictions between the manner in which EDI functions and pre-existing contractual requirements for "written" notices, offers or similar communications.[193]

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[191] *Id.*, Section 3.3.3 Comment 5. For a further discussion of these requirements, see *infra* Part VII.

[192] U.C.C. § 1-205(1), (3), (4). A course of dealing between parties is defined by the Code as a "sequence of previous conduct [prior] to a particular transaction which is fairly to be regarded as establishing a common basis of understanding for interpreting their expressions and other conduct." *Id.* § 1-205. A course of dealing, therefore, may include the various steps taken by trading partners to establish and maintain the ability to communicate through EDI. *See generally* Amerine Nat'l. Corp. v. Denver Feed Co., 493 F.2d 1275, 14 U.C.C. Rep. Serv. (Callaghan) 885 (10th Cir. 1974); Dunn v. General Equities of Iowa, Ltd., 319 N.W.2d 515, 33 U.C.C. Rep. Serv. (Callaghan) 1615 (Iowa 1982).

[193] U.C.C. § 2-208 & Official Comments. *See also id.* §§ 2-202(a), 2-207(3). In T.J. Stevenson & Co. v. 81,193 Bags of Flour, 629 F.2d 338, 30 U.C.C. Rep. Serv. 865 (5th Cir. 1980), the court held that seller's subsequent responses to buyer's complaints, where the contract required notice of breach via registered mail but the buyer notified seller of breach via telex and other informal communications, established a course of performance under which the contractual notice provision could be disregarded. *But see* Consolidated Foods Corp. v. Roland Foods, Inc., 13 U.C.C. Rep. Serv. 245 (D.C. 1973) (usage of trade regarding the right of buyer to return goods to seller, if the goods cannot be resold, does not overcome the requirement for such return agreement to be evidenced by a written memorandum). *See generally* WHITE & SUMMERS, *supra* note 113, § 3.3 (and authorities cited therein); 3 CORBIN, *supra* note 144, §§ 555-58; 5 S. WILLISTON, WILLISTON ON CONTRACTS §§ 648-62 (1961).

Third, the Model Agreement establishes the basis, failing the effectiveness of the foregoing responses,[194] for either party to assert estoppel in order to bar reliance upon the Statute of Frauds. Section 3.3.4 contains a promise by each party to not contest the validity or enforceability of "Signed Documents" under the provisions of any applicable law relating to whether agreements be in writing or signed by the party to be bound thereby.[195] The provisions extend beyond the Statute of Frauds of section 2-201; laws which require only a writing or which require only a signature are also included. The giving of this promise by each trading partner induces the other party, in part, to implement the use of the technology of EDI, including purchasing the necessary hardware and software and absorbing the costs of operation. Once established as an effective means of communication, it is reasonable to believe that further reliance will result; the exchange of normal business communications using EDI will, in the absence of a breach, result in conduct consistent with the terms of the Documents which have been communicated. Goods will be manufactured, packages will be shipped and opportunities to purchase goods from other sources, or sell goods to other outlets, will be foregone. Accordingly, the Model Agreement may support the argument, consistent with the holdings of previous decisions based upon the doctrine of estoppel, that the conduct of the parties may bar access to the Statute of Frauds as a defense.[196]

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[194] Section 4.2 of the Model Agreement provides for the severability of its provisions. *See infra* notes 197-198 and accompanying text.

[195] MODEL AGREEMENT, Section 3.3.4. The Model Agreement did not incorporate the "waiver strategy" in any other form. *See supra* Part VI.B.1.a. The Task Force determined that waiver per se is not a well-recognized exception, if it is recognized at all (*see generally* A. FARNSWORTH, *supra* note 159, at § 8.5), and could be held invalid in many cases on equitable grounds or could be revoked; the more appropriate analysis was that of estoppel

Finally, the Model Agreement includes a severability clause, in order to assure that the entire contract would not fail in the event any specific provision is determined to be unenforceable under any particular circumstances.[197] The Task Force recognized that the Model Agreement will be implemented in a variety of situations, and that a risk exists that the various provisions of the Model Agreement may not be fully effective when implemented on a case-by-case basis. The severability clause provides the flexibility for a court to recognize one or more particular provisions of the Model Agreement (and their implications under existing commercial law) without necessarily being required to validate all of the provisions. In that fashion, the Model

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[196] *See* RESTATEMENT (SECOND) OF CONTRACTS § 139 (1981); *see also supra* notes 159-161 and accompanying text. The Task Force considered the view that the use of EDI in a consistent manner could effectively waive the requirements for a writing set forth in the Statute of Frauds or other applicable law pursuant to U.C.C. § 2-209(4). *See* Double-E Sportswear Corp. v. Girard Trust Bank, 488 F.2d 292, 13 U.C.C. Rep. Serv. 577 (3d Cir. 1973) (and related authorities cited therein). *See generally* Murray, *The Modification Mystery: Section 2-209 of the Uniform Commercial Code*, 32 VILL. L.R. 1 (1987); Hillman, *A Study of Uniform Commercial Code Methodology: Contract Modification Under Article Two*, 59 N.C. L. REV. 335 (1981); Eisler, *Oral Modifications of Sales Contracts Under the Uniform Commercial Code: The Statute of Frauds Problem*, 58 WASH. U.L.Q. 277 (1980). *See* 2 CORBIN, *supra* note 156, § 310, at 112 n.53. However, since the Model Agreement did not constitute, in the first instance, a contract for the sale of goods, it was not likely to be the contract claimed to be modified orally by the use of EDI nor was it a contract within the provisions of Article 2 capable of modification or waiver in the manner contemplated by U.C.C. § 2-209. *See supra* note 189. Thus the issue of waiver pursuant to § 2-209 is not addressed by the Model Agreement.

[197] MODEL AGREEMENT, Section 4.2.

Agreement maximizes the likelihood that underlying Transactions, as well as the provisions of the Model Agreement, will be upheld.[198]

2. *Proving the Contract for Sale*

The Task Force determined that adoption in the Model Agreement of responses to the Statute of Frauds and related laws was only one step towards accommodating EDI with current legal requirements; an additional need was to assure compliance with the rules of evidence governing the admissibility of documents.[199] Accordingly, the Model Agreement includes several provisions to facilitate the admissibility of the records of EDI transactions in the event any dispute arises requiring resolution.[200]

First, the Model Agreement contains a mutual agreement by the parties not to contest Signed Documents under applicable laws relating to whether certain agreements need be in writing or signed.[201] Second, the Model Agreement accommodates Signed Documents within the best evidence rule, which requires an "original writing."[202] For the purpose of computer generated records, the original of "data . . . stored in a computer or similar device" is "the printout or other output readable by sight, [and] shown to reflect the data accurately." Thus, the printout is acceptable as the best evidence.[203] Accordingly, the Model Agreement provides that Signed Documents will constitute an "original" when printed from electronic files or records established and maintained in the normal course of business,[204] and provides that Signed Documents will be admissible to the same extent and under the same conditions as other business records originated and maintained in documentary form.[205]

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[198] Severability clauses are generally recognized as valid. United Van Lines, Inc. v. U.S., 448 F.2d 1190, 1199 (D.C. Cir. 1971) (contract not divisible when entered into may become so at a later time by express or implied agreement of the parties); 17A C.J.S. *Contracts* § 331, at 308 (1963) (failure of a distinct part of a severable contract does not void the remainder); *id.* § 332, at 309-10 (intention of parties controls, so contract drawn in entire and not severable can be rendered severable by the parties' agreement); 6 S. WILLISTON, WILLISTON ON CONTRACTS § 862, at 270 (1962).

[199] Except as part of the "waiver strategy" referred to earlier, the Study did not identify any EDI agreements which attempted to establish evidentiary standards to be effective between trading partners.

[200] The provisions, contained in Section 3.3, apply only to Signed Documents; to the extent EDI transmissions between the parties do not satisfy the definition of Signed Documents, the Model Agreement's provisions are not applicable. *See also* MODEL AGREEMENT, Section 1.1 ("Any transmission of data which is not a Document shall have no force or effect between the parties unless justifiably relied upon by the receiving party."). Section 1.1 is intended to protect certain reasonable expectations when data has been received. *See* MODEL AGREEMENT, Section 1.1 Comment 8. In the absence of justifiable reliance, Section 1.1 also precludes non-Documents from having evidentiary value. The rules are intended to apply in any judicial, arbitration, mediation or administrative proceedings. *Id.*, Sections 3.3.4 and 4.7 (Arbitration). Note that the Task Force intentionally limited the rules of Section 3.3.4 to be effective "as between the parties"; the Model Agreement does not purport to address the admissibility of EDI records in proceedings not between the signatories.

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[201] *Id.*, Section 3.3.4.

[202] FED. R. EVID. 1002. *See generally* C. MCCORMICK, EVIDENCE, ch. 23 (2d ed. 1972); 4 J. WIGMORE, EVIDENCE §§ 1177-1282; 5 J. WEINSTEIN & M. BERGER, WEINSTEIN'S EVIDENCE art. X, ¶ 1002 (1988) [hereinafter 5 WEINSTEIN & BERGER].

[203] *See* Note, *The Discovery and Use of Computerized Information: An Examination of Current Approaches*, 13 PEPPERDINE L. REV. 405, 417-18 (1986). *See generally* G. JOSEPH, MODERN VISUAL EVIDENCE § 7.04 (1988); Lynch & Brenson, *Computer Generated Evidence: The Impact of Computer Technology on the Traditional Rules of Evidence*, 20 LOY. U. CHI. L. J. 919 (1989); Roberts, *A Practitioner's Primer on Computer-Generated Evidence*, 41 U. CHI. L. R. 254 (1974); Wallace, *Computer Printouts of Business Records and Their Admissibility in New York*, 31 ALB. L. REV. 61 (1967); Freed, *Computer Print-Outs as Evidence*, 16 AM. JUR. 2D *Proof of Facts* 273, 299 (1965).

[204] MODEL AGREEMENT, Section 3.3.2(b).

[205] *Id.*, Section 3.3.4. If computer information was input from paper documents, but such originals are lost or destroyed, the computer records may also be admitted. FED. R. EVID. 1004. If the paper records are voluminous, a printout may be admitted notwithstanding the existence of the original paper records. FED. R. EVID. 1006. *See generally* 5 WEINSTEIN & BERGER, *supra* note 205, art. X, ¶ 1006; Broun, *Authentication and Contents of Writings*, 1969 ARIZ. ST. L. J. 611; Dewey, *Best Evidence Rule--Use of Summaries of Voluminous Originals*, 37 MICH. L. REV. 499 (1939).

Computerized business records are exempt from the hearsay rule[206] to the extent such records constitute "data compilation, in any form, . . . made at or near the time by, or from information transmitted by, a person with knowledge, if kept in the course of a regularly conducted business activity, and if it was the regular practice of that business activity to make the . . . data compilation."[207] The Task Force determined, based on existing EDI commercial practices, that records resulting or relating to EDI transactions likely would qualify under this well-established exception. Implementing a "belt and suspenders" approach, the non-contest covenant also prevents assertion of the hearsay rule.

The Model Agreement does not eliminate the need for a proper foundation prior to the admissibility of the evidence. Such foundation must come from the parties and their respective witnesses, who must demonstrate familiarity with the related business procedures and the manner in which the computer information is maintained.[208] In this regard, the effectiveness and reliability of each party's security procedures, record retention policies, and confidentiality obligations and their conduct under the provisions of the Model Agreement may be relevant in individual cases to determining the ultimate admissibility of any Signed Documents, as well as resolving any issues with regard to the comparative credibility of either party's records.[209] The non-contest covenant has been drafted narrowly to apply only to objections originating from the absence of paper; the opportunity for either party to challenge the admissibility of Signed Documents on any basis relating to the foundation established therefor or the credibility thereof (*e.g.* the adequacy of the record retention policies or related practices) is intended to be preserved.

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[206] FED. R. EVID. 802 *et seq*. *See generally* 4 J. WEINSTEIN & M. BERGER, WEINSTEIN'S EVIDENCE art. VIII, ¶ 802 (1988) [hereinafter 4 WEINSTEIN & BERGER]. MCCORMICK, *supra* note 205, ch. 24; Lynch & Brenson, *supra* note 206.

[207] FED. R. EVID. 803(6). *See generally* 4 WEINSTEIN & BERGER, *supra* note 209, art. VIII, ¶ 803(6)[02].

[208] *See* Note, *supra* note 206, at 415; *see also* United States v. Hutson, 821 F.2d 1015 (5th Cir. 1987); United States v. Croft, 750 F.2d 1354 (7th Cir. 1984).

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[209] *See* FED. R. EVID. 901(b)(9) (when producing evidence describing a process or system, it must be shown that the process or system produces an accurate result). *See generally* 5 WEINSTEIN & BERGER, *supra* note 205, art. IX, ¶ 901(b)(9)[01]. The Study indicated that many EDI users are interested in developing procedures which enhance the reliability of the resulting records. Within electronic environments, there is a general perception that electronically stored records are more vulnerable to alteration when compared to conventional paper records. Various security procedures have been developed to reduce the risk of alteration of electronic records, or to increase the likelihood of detecting any forgery efforts. Techniques for preserving the data integrity include access control, message analysis, the use of non-erasable media and the application of sophisticated cryptography techniques. *See also* MODEL AGREEMENT, Sections 1.4, 3.2.

In developing security procedures, counsel should be mindful of the disparity that may exist in the records retained by the respective parties. *See supra* note 152. Within the EDI community, there is discussion of a developing business in which third parties, such as Providers, might offer EDI record retention services for the mutual benefit of the trading partners. This practice might help eliminate disputes regarding the comparative trustworthiness of each trading partner's respective record retention systems.

In the absence of garbled or unintelligible transmissions (see MODEL AGREEMENT, Section 2.4; *supra* Part VI.A.3), no presumption arises as to whether one trading partner's records control in demonstrating the content of particular EDI communications. The Study determined that trading partners generally have an equal opportunity with existing technology to maintain reasonably secure records of EDI communications. (To the extent trading partners are interested in assuring that procedures to maintain secure records are adopted, MODEL AGREEMENT, Section 1.4 (Security Procedures) provides that opportunity. *See also infra* Part VII.D.) Accordingly, the Model Agreement's rules of conduct for the parties in connection with the use of Signed Documents as evidence operate in a mutual manner.

3. *Arbitration*

The Study recognized that EDI commercial practices are characterized by speed and increased efficiency. Accordingly, the Task Force determined that, in the event of a dispute arising out of or relating to the use of EDI, seeking expedited resolution of that dispute was consistent with the objectives which EDI attempts to achieve. Arbitration, or another form of alternate dispute resolution, should be evaluated by trading partners as a method of deciding such disputes.

The Model Agreement includes, as an optional provision, the recommended arbitration clause of the American Arbitration Association.[210] The agreement to arbitrate is limited to disputes arising out of or relating to the Model Agreement. By including Section 4.7, the Task Force did not intend to resolve the debate regarding alternate dispute resolution or the relative advantages and disadvantages of arbitration as one such mechanism.[211] The Task Force believed that an advantage to arbitration for trading partners to consider was the fact that an arbitration panel selected to resolve disputes arising under the Model Agreement would likely have expertise relating to the technology to more readily appreciate the efforts taken by the parties to ensure the reliability and enforceability of the underlying commercial agreements.[212]

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[210] MODEL AGREEMENT, Section 4.7. AMERICAN ARBITRATION ASS'N, COMMERCIAL ARBITRATION RULES 2 (1988).

[211] The House of Delegates of the American Bar Association, in 1989, adopted resolutions endorsing the implementation of alternate dispute resolution as a means of resolving certain legal disputes. *Alternative Dispute Resolution*, 58 U.S.L.W. 2129 (Aug. 29, 1989); *ABA House Approves International Proposals, Antitrust Sessions Examines Competitiveness*, 6 Int'l Trade Rep. (BNA) No. 35, at 1122 (Aug. 30, 1989). *See also* 9 U.S.C. §§ 1-14 (1982) (the Federal Arbitration Act, which provides for the validity of written arbitration agreements applicable to transactions "involving commerce").

C. *Terms and Conditions*

The Task Force determined at an early stage that a successful business implementation of EDI must consider the interaction between the use of EDI and the terms and conditions which fully shape the underlying commercial transactions. The Study, therefore, sought to review existing methods of establishing the terms and conditions applicable to purchase and sale transactions in conventional arrangements and to evaluate the comparable techniques, if any, in the evolving electronic environment.

Treatment of the additional terms and conditions applicable to any electronic contract, within the EDI agreements included in the Study, was fairly predictable based on the nature of the underlying commercial relationship.[213] To the extent the EDI activity facilitated the terms of an existing master purchase agreement, the terms and conditions of such agreement expressly controlled the new electronic contracts. In the absence of a master purchase agreement, the additional terms and conditions were either (a) specified as the terms and conditions of the purchaser (generally where the purchaser was a larger corporation), (b) defined to be the terms and conditions of the parties' respective paper forms, which were attached or otherwise incorporated by reference (notwithstanding any conflict between the forms), or (c) not addressed. In the absence of an EDI agreement between the parties, or in cases where no agreement is reached on applicable terms and conditions, the Code provides the necessary supplemental terms.[214] The use of EDI in the absence of an EDI agreement, therefore, should not result in the absence of a contract for a sale of goods. Indeed, normal EDI communications practices appear to provide sufficient information to assure that any contract for sale, independent of enforceability questions, would not fail for indefiniteness.[215]

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[212] By including the recommended language from the American Arbitration Association, the Model Agreement leaves to counsel the opportunity to substitute negotiated provisions reflecting the comparative interests of the parties in the structure and format of any resulting arbitration. *See* MODEL AGREEMENT, Section 4.7 Comment 2. Note that Section 4.7 only requires arbitration of disputes "arising out of or relating to the Agreement, or breach thereof." Disputes relating solely to the underlying sales transactions (for example, disputes over quality) would not be subject to arbitration pursuant to Section 4.7.

[213] EDI has been consistently implemented to facilitate ongoing, repetitive commercial relationships. The future easily contemplates data exchange networks as complete and as accessible, even for random transactions, as existing telephone networks, but the development of EDI simply has not reached that point.

Within the EDI community, there is a natural tension in dealing with terms and conditions. The function of EDI is to compress data; efforts made within existing standard transaction sets to accommodate "additional" terms and conditions have been inadequate to accommodate the full array of terms customarily found on the

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[214] *See, e.g.*, U.C.C. §§ 2-305 (open price term), 2-307 (delivery in a single lot), 2-308 (place for delivery), 2-309 (time for shipment or delivery). In addition, course of dealing, usage of trade and course of performance remain relevant. *See also id.* §§ 1-205, 2-208.

[215] *See id.* § 2-204(3).

"back-side" of purchasing documents.[216] Interviews with various EDI users clearly indicated that, in adopting EDI, they did not intend to conduct business on terms and conditions different than those reflected by the "back-side" of their standard written documents. Indeed, the prospect presents itself that the implementation of EDI might actually result in gaps between paper and electronic trading practices which could temper the enthusiasm for EDI of risk-averse management.

The Task Force strongly felt that the Model Agreement should not ignore the issue of commercial terms and conditions. The Study uncovered no reason to believe that use of EDI between trading partners justifies the elimination of the terms and conditions which customarily define the full dimension of their commercial transactions. Therefore, the Model Agreement strongly endorses the view that (a) a negotiated agreement on all terms and conditions (not just those for which transaction sets accommodate the data) is the preferred commercial practice and (b) terms and conditions should not be overlooked in the process of implementing EDI.[217] The Model Agreement incorporates each of the commercial practices reflected by the results of the Study in an effort to preserve maximum contract flexibility for those implementing EDI.

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[216] It is not clear the extent to which EDI users rely upon "free text" for communicating supplemental terms and conditions. The ASC X12 purchase order format includes several data elements which may be used to a limited degree for such purpose. ACCREDITED STANDARDS COMM. X12, ASC X12 850 PURCHASE ORDER (Version 2, Release 2, 1988). One technique used in several EDI agreements appears to have substantial promise for broad commercial use. The EDI agreement provided that the appearance of a specified code (*e.g.*, "31") in a specified data field of a particular type of Document incorporated by reference into the Document the terms and conditions set forth in full text within the EDI agreement. This strategy was implemented, in particular, to attempt to assure that the purchaser was entering into transactions with sellers who are required by government regulations to certify in connection with each transaction their compliance with certain applicable federal laws (such as the Fair Labor Standards Act, 29 U.S.C. §§ 201-19 (1982)).

Section 3.1 of the Model Agreement responds to three situations: (a) the parties have previously or concurrently executed a separate contract for the sale of goods, which may be in the form of a master purchase, requirements or outputs agreement; (b) the parties execute such an agreement after the Model Agreement is signed; or (c) the parties conduct business in the absence of or outside the scope of any such agreements, relying solely upon the Documents and the conduct of the parties pursuant to the Model Agreement to establish any contract.[218] In the final case, Section 3.1 requires the parties to elect from among three alternatives the manner for providing the additional terms and conditions not anticipated by the standard formats of applicable Documents.[219]

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[217] The Task Force considered the view that standard terms and conditions be incorporated into the Model Agreement, thereby expressly requiring negotiation of these additional terms and conditions as a condition precedent to the use of EDI. For two reasons, such an approach was rejected. First, the Task Force did not consider an effort to develop general terms and conditions with broad commercial utility to be within the scope of the Study or the Task Force's mission. *See supra* Part II. Second, recognizing commercial reality, the Task Force also determined that mandating such negotiations as a pre-condition for EDI would impede the Model Agreement's effectiveness.

One company significantly involved in the development of EDI, and in its continued growth, has sought to establish a minimum set of terms and conditions which might be acceptable to both buyers and sellers in situations where the parties mutually seek to avoid protracted negotiations. These terms and conditions include warranty, delivery of goods, rights of rejection, liability for non-conforming goods and attorney's fees. *See* MODEL AGREEMENT, Section 3.1 Comment 3.

[218] In either the first or second case, the other agreement is assumed to be the instrument by which the parties have had the opportunity to negotiate and agree upon terms and conditions applicable to any Transaction which are not defined by the content of any Document. The first sentence of Section 3.1 permits the parties to incorporate the Model Agreement by reference into the other agreement.

Option [A] requires negotiation and agreement upon the additional terms and conditions, including terms for payment.[220] The negotiated terms would be included in the Appendix. This option achieves the highest level of certainty in establishing the terms of any contract of sale.[221]

Option [B] permits incorporation into the electronic environment of existing paper-based methods of conducting business. It requires each party's standard printed forms to be incorporated as a part of the Model Agreement. The parties may attach such forms to the Appendix or may identify the appropriate forms which are to be incorporated by reference. Option [B] has the objective of clearly defining for each party, the terms and conditions upon which it wishes to conduct business. Selecting the option of attaching such forms to the Appendix assures that the terms and conditions of each party are explicitly known and disclosed.[222] If selected, however, option [B] will not achieve the highest level of certainty as to the terms of any contract of sale. In the event of any inconsistency or conflict between the respective forms of the parties, option [B] moves into the electronic environment the method set forth in section 2-207 of the Code to resolve the "battle of the forms."[223]

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[219] If the parties clearly intend that the Model Agreement is to be used solely and exclusively in connection with other written agreements, and that no other EDI transactions should be authorized, the second sentence of Section 3.1 may be deleted. However, that sentence serves as a "safety basket" for future transactions not otherwise contemplated; the Commentary encourages the deletion of that sentence only after careful analysis.

[220] In this respect, the Model Agreement acknowledges that the use of EDI has also encouraged the increased use of electronic payments. Although not otherwise addressed by the Model Agreement (*see infra* Part VII.G.), the Task Force believed that focusing upon terms of payment should be encouraged for those parties willing to undertake a negotiation of all other terms and conditions.

[221] If the parties elect option [A], the Commentary encourages counsel to carefully consider whether additional terms and conditions should be included to fully implement the commercial intentions of the parties expressed in other provisions of the Agreement. *See* MODEL AGREEMENT, Section 3.1 Comment 2; Section 2.3 Drafting Consideration 5.

By including option [B], an option that was strongly urged by many EDI users to reflect established EDI practices, the Task Force drew significant criticism from legal commentators on working drafts of the Model Agreement. Section 2-207 has been considered the most controversial section of the Code, has been subject to significant criticism and the judicial application of its provisions has recently been described as "a miserable flop";[224] option [B] was criticized for perpetuating in the electronic environment an unacceptable aspect of current commercial law. The Task Force concluded that an objective for the Model Agreement was to bring transactions in line with other commercial practices. The Study clearly demonstrated that a very substantial portion of commercial transactions effected in the absence of a master purchasing agreement are and will continue to be completed without negotiations on the "back-side" terms and conditions. The Task Force determined, therefore, that the use of EDI did not justify a fundamental revision in existing commercial practice. Accordingly, option [B] remained as an available option within the final version of the Model Agreement.[225]

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[222] In response to general industry practice, option [B] includes, as a further option, language permitting the terms and conditions of any form attached to or identified in the Appendix to be amended by subsequent written notice (which notice must be sufficient to adequately identify the new form or changes). If this option is elected, either party may then incorporate into EDI trading from time to time the changes in terms and conditions which may occur in its paper-based trading practices. Parties wishing to retain greater control over subsequent amendments would not elect the optional language. In that case, subsequent forms would require mutual agreement for subsequent attachment or identification. *See also* MODEL AGREEMENT, Section 3.1 Drafting Consideration 3.

In incorporating terms and conditions, whether through Section 3.1[A] or [B], counsel should consider whether that approach preserves the validity of all of the terms and conditions that are set forth, whether in the Appendix or on attached or incorporated pre-printed forms. Of particular concern may be the effectiveness of any disclaimers of warranty, which must be set forth in conspicuous language under U.C.C. § 2-316, and also product warnings and instructions.

[223] U.C.C. § 2-207. *See generally* WHITE & SUMMERS, *supra* note 113, § 1-3.

[224] *See* Murray, *supra* note 80, at 40.

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[225] An alternate suggestion considered by the Task Force was to establish, within the electronic environment, a manner of resolving the exchange of inconsistent terms. However, the Task Force rejected this suggestion as well, keeping in mind Professor Honnold's admonition that "legal science has not yet found a satisfactory way to decide what the parties have 'agreed' when they have consummated a transaction on the basis of the routine exchange of inconsistent forms." J. HONNOLD, *supra* note 170, § 165, at 189. *See also* Murray, *The Chaos of the "Battle of the Forms"*, 39 VAND. L. REV. 1307 (1986) (and authorities cited therein).

Concern was also expressed that MODEL AGREEMENT, Section 3.1[B] eliminated the sequencing function of U.C.C. § 2-207. The Task Force considered this concern, but concluded the Model Agreement was responsive. The last sentence of Section 3.1 provides that in the event of inconsistency or a conflict, "any conflict or dispute that arises between parties in connection with any such Transaction will be resolved as if such Transaction has been effected through the use of such forms." The nature of the typical forms in question suggest the sequence in which any court should consider their terms--*i.e.*, a purchase order generally precedes a purchase order acknowledgement. Moreover, the printed forms to be attached or incorporated are only intended to complement the corresponding EDI Documents; therefore, the order in which the EDI Documents are transmitted also suggests the order in which the printed forms are to be considered in the application of U.C.C. § 2-207.

The Study Committee on Article 2 (established by the Permanent Editorial Board; *see supra* note 182) has proposed certain recommendations which will eliminate the functionality of U.C.C. § 2-207(2). If implemented, those recommendations would change the manner in which a dispute between contradictory terms is resolved. However, the business practice of requiring terms and conditions in commercial transactions and the business practice of merchants being in disagreement over those terms and conditions, and not choosing to reach a negotiated solution prior to commencing sales activities, will continue. The Model Agreement's provisions, therefore, will remain functional, notwithstanding the proposed recommended changes. Whether the Permanent Editorial Board chooses to establish a drafting committee, and whether the recommendations of the Study Committee are actually implemented, remains to be seen.

Option [C] incorporates into each contract for the sale of goods the manner by which applicable law determines additional terms and conditions (other than quantity) which have not been agreed upon by the parties. The last sentence of Section 3.1 confirms that the intent of the parties to give effect to the provisions of the Model Agreement is not contradicted by other terms and conditions applicable to any Transaction, whether set forth in any written agreement described in Section 3.1 or by applicable law.[226]

D. *Liability and Damages*

The Study demonstrated that those implementing EDI did not adopt the technology with an expectation they would introduce substantial risks, with the attendant possibility of damages, beyond those customary to their businesses in the absence of the new means of communication. Indeed, a primary function of EDI is to reduce risks, in particular those resulting from inconsistent records, lost documents or the delays required to reconstruct information or data. Many EDI users acknowledged concern because of their inability to complete a sufficient risk analysis. Accordingly, the Task Force concluded that the Model Agreement should include provisions which reflect the intentions of those implementing EDI to not expose their businesses to new, perhaps unreasonable, risks.

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[226] For example, a separate contract for the sale of goods may provide for acceptance, in a paper-based environment, to occur upon the receipt of a signed purchase order acknowledgement at the offices of buyer by certified mail. The last sentence of Section 3.1 provides for the acceptance mechanism established pursuant to the Model Agreement (*see* MODEL AGREEMENT, Section 2.3) to control with respect to EDI transmissions. Thus, the commercial intent of the parties, taken as a whole, is given effect.

Existing EDI agreements reviewed in the Study, particularly those that were more comprehensive in scope, reflected similar views.

The Model Agreement, therefore, contains Section 4.6, which limits the liability of the parties with regard to particular types of damages. Specifically, no liability will exist between the parties for any special, incidental, exemplary or consequential damages arising from or as a result of any delay, omission or error in the electronic transmission or receipt of any Documents pursuant to the Model Agreement. The scope of this provision is restricted; the intent is to limit liability only for those types of damages arising from the actual use of EDI. Section 4.6 is not intended to restrict in any manner the liability of the parties relating to performance or non-performance of the underlying Transactions. Any limitation on liability with regard to those Transactions is to be handled elsewhere, either in the Model Agreement, or in any master purchasing agreements of which the Model Agreement is considered a part.[227] Section 4.6 does not limit responsibility for damages resulting from a breach of the obligations regarding security procedures, confidentiality (if any) or verification.[228] In contrast, the limitations of Section 4.6 are intended to include liabilities resulting under the optional provisions of Section 1.2.3 relating to the acts or omissions of the Providers of the parties.

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[227] *See* MODEL AGREEMENT, Section 3.1 (Terms and Conditions). The Code specifically contemplates the limitation of damages in connection with the underlying Transactions. U.C.C. § 2-719.

[228] *See* MODEL AGREEMENT, Sections 1.4, 1.5, 2.2. If different results are desired, counsel is alerted by the Commentary to make appropriate changes. *See id.*, Section 4.6 Comment.

The Study also identified substantial concern among EDI participants as to the impact of any mechanical or electronic failure which is beyond their reasonable control. Accordingly, the Model Agreement includes a customary force majeure clause, specifically excusing liability under those circumstances.[229] Performance is excused, however, only with respect to events which prevent the transmission or receipt of Documents. The impact of other events on the other obligations of the parties, whether under the Model Agreement or in connection with any underlying Transaction, is not governed by the Model Agreement. Scheduled maintenance or other "down-time" events are not recognized as a basis for excusing performance of the respective obligations of the parties.[230]

VII. THE COMMERCIAL ISSUES

Establishing an EDI trading relationship, by necessity, involves a series of integrated decisions by both trading partners, primarily technical in nature, regarding: (a) the formats in which the data will be transmitted, and the standards and possible implementation guidelines to be adopted; (b) the possible selection of Providers (as well as the various business decisions required in connection with establishing such relationship); and (c) the development and maintenance of appropriate computer and communication systems and security procedures. The decisions are complemented by other decisions and mutual agreements between trading partners which, taken together, can facilitate effective and reliable communication.[231] Section 1 of the Model Agreement, together with corresponding provisions of the Appendix, provide a framework for the parties to mutually structure these decisions.[232]

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[229] MODEL AGREEMENT, Section 4.5.

[230] The Commentary alerts counsel to consider the effect of Section 4.5 upon the obligations arising under Section 1.2.3 (if included in any definitive agreement); one issue is whether the actions of a Provider would be considered beyond the reasonable control of one of the trading partners. *See* MODEL AGREEMENT, Section 4.5 Comment 3.

A. *Standards, Documents and Guidelines*

1. *Standards*

The technical specifications for the uniform electronic interchange of business data are called "standards." Standards include provisions for the structure and format of data into transaction sets[233] as well as the transmission of the formatted data. There are also standards, among other things, for certain security and communication procedures. The Model Agreement requires the parties to specify the standards that will be applicable and to transmit all Documents in accordance with the selected standards.[234]

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[231] Many of the additional decisions and mutual agreements required of trading partners may be considered appropriate for specification, either in the Appendix or in other formats. Several EDI users have developed implementation manuals which assure that these additional matters are appropriately communicated and incorporated into the EDI relationship. An example of these additional matters is identifying contact personnel for ongoing communication issues, access and utilization of network management and hardware and software identifying information. The Task Force did not consider the Model Agreement an appropriate vehicle for identifying or indexing all possible considerations. Rather, the Task Force identified those items which, above all others, most likely confirmed the intention of trading partners to give legal significance to the content of their EDI communications and significantly bolstered reliablity. *See also* MODEL AGREEMENT, Sections 2.1, 2.3, 3.3.3; *infra* notes 190-193 and accompanying text.

[232] Implementing EDI should also involve careful evaluation of existing internal business procedures and controls of the parties' paper-based commercial practices. The extent to which such procedures and controls should be strengthened or modified in connection with the establishment of an electronic communication and trading environment is a relevant factor in assuring reliable EDI. For example, authorizations to release purchase orders or approve payments, as well as rules regarding security and confidentiality, should be reviewed. *See also* MODEL AGREEMENT, Sections 2.1, 3 & Comments.

The selection of applicable standards is a matter of some flexibility. The parties may mutually select and utilize one or more sets of recognized standards, or, within certain technical limits, customize those standards to their mutual benefit.[235] Virtually all standards for EDI include detailed technical requirements. Pursuant to language contained in the Appendix, the selection by the parties of applicable standards acts to incorporate by reference these additional requirements.[236]

2. *Documents*

The second decision required of trading partners is to determine what transaction sets they will electronically exchange. Transaction sets selected by the parties are defined by the Model

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[233] "Transaction sets" define the types of data which the specified transmission must contain and the format in which the data must appear. Transaction sets function like conventional paper document forms, and include purchase orders, requests for quotations, purchase order acknowledgements, invoices, remittance advices and purchase order change requests.

[234] MODEL AGREEMENT, Section 1.1. The remaining provisions of the Model Agreement generally apply only to those transmissions of data which the parties mutually accept as Documents.

[235] Existing technology also permits each party to adopt a different standard for transmission of a Document, with Providers subsequently converting the data between the different formats as a value-added service.

[236] Should the parties desire to exclude or modify any of such requirements, such changes may be made in the Appendix.

Agreement as "Documents."[237] At a minimum, the transaction sets which are listed in the Appendix (including subsequent additions) are Documents.[238] As an option, trading partners may also agree for transaction sets which are not listed in the Appendix, but which are regularly transmitted between them, to be considered as Documents. The Task Force considered this provision important, as an option, in order to accommodate developments in EDI. Once initial EDI activity is established, trading partners continue to add additional transaction sets, often without ever returning to the original EDI agreement to supplement any original listing of transaction sets. Under these circumstances, the intention of the parties has not changed; the new transaction sets are intended to be as fully effective as those originally adopted by the parties. The effect of the "regularly transmit" option is to give effect to those intentions and not allow an irregularity with the terms of the Appendix to undermine the actual intention of the parties.[239] The

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[237] MODEL AGREEMENT, Section 1.1.

[238] The Study indicated that one operational difficulty being experienced as a result of rapid standards development was the failure of EDI users to consistently upgrade their software and programs to conform to new releases of standards. From the Provider's view, this creates difficulties in maintaining an adequate capability to service and support a variety of different historical versions which in turn is reflected in increased costs to users. Therefore, in specifying Documents in the Appendix, it is recommended that the parties agree that any selected Document be communicated only in the then current release version or the release version immediately preceding the then current release version. Consistent with the provisions of Section 1.3, this will require the parties to periodically install new release versions of software corresponding to new revisions of the applicable standards. *See* MODEL AGREEMENT, Section 1.3 & Comments. Counsel may wish to consider establishing a time frame in which such changes should occur.

[239] No attempt to define the phrase "regularly transmit" has been made. Parties who wish to retain tight control over which transmissions qualify as Documents under Section 1.1 will eliminate the "regularly transmit" option. If the "regularly transmit" option is not included, regularly transmitted transaction sets may still be given effect, though inconsistent with the terms of the Model Agreement, if a course of performance or a course of dealing results. *See* U.C.C. §§ 2-208, 2-209.

Model Agreement also provides that any transmission of data which is not a Document shall have no force or effect, unless justifiably relied upon by the receiving party.[240] Again, this provision operates to protect the reasonable conduct of the parties, notwithstanding the fact that the Appendix may contain a specified list of transaction sets. In the absence of the "regularly transmit" language, justifiable reliance is protected.[241]

3. *Guidelines*

The Model Agreement, as an option, allows the parties to specify in the Appendix certain published industry guidelines and to agree that all Documents be transmitted in accordance with the specified

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[240] The second sentence of Section 1.1 is not intended to alter the law of reliance; the provision simply prevents a party which has transmitted data from avoiding the legal effect of the receiving party's justifiable reliance merely because the format had not been previously classified as a Document. However, the remaining provisions of the Model Agreement relating to Documents are not applicable in those circumstances. *See, e.g.*, MODEL AGREEMENT, Sections 1.2.3, 2.1, 3.3, 4.6. Parties wishing to retain tight control may wish to eliminate the phrase "unless justifiably relied upon by the receiving party" or make other modifications to, or entirely delete, that sentence. However, such changes may not effectively prevent a transmission which is not a Document from having legal effect, where the receiving party has justifiably relied on that transmission under the circumstance (including the language in the Agreement). *See* Bartlett v. Stanchfield, 148 Mass. 394, 395, 19 N.E. 549, 550 (1889) (Justice Holmes, in holding that an oral modification to a construction contract was binding despite a provision in the agreement that changes may only be made in writing, noted that "[a]ttempts of parties to tie up by contract their freedom of dealing with each other are futile.")

[241] Query, however, how justifiable one's reliance if the Model Agreement contains a list of acceptable transaction sets but does not permit those additional transaction sets which are regularly transmitted to be considered as Documents. If the "regularly transmit" language appears, the last sentence of Section 1.1 works to provides the parties a level of protection with regard to the use of new transaction sets prior to "regularly transmit" status being achieved.

guidelines.[242] "Published industry guidelines" contain recommended procedures and implementation guidelines for the use of EDI within particular industries (examples include guidelines of the automotive, chemical and pharmaceutical industries).[243] In contrast to standards, which require compliance for the effective interchange of data, guidelines generally are intended to aid implementation among trading partners. Guidelines may also specify choices of optional data segments within particular standards.

In reviewing existing guidelines, members of the Task Force were impressed by the potential of these guidelines to impact upon the contract formation process and the substance of ongoing commercial relationships. Many of the guidelines prescribe instructions on the manner in which particular transaction sets are to be used, as well as the content or meaning within the trade of particular elements of data or codes used within specified transaction sets. In particular, two sets of guidelines which were reviewed included instructions on when purchase order acknowledgements or similar confirmatory memoranda were to be transmitted. To the extent such guidelines may be adopted for use, their provisions, therefore, may contradict explicit agreements contained in the Model Agreement or in any other purchasing contract to which the Model Agreement relates. The use and development of industry guidelines remains in an early stage and their use is not universal. For these reasons, the Task Force determined that guideline implementation be recognized, but be presented as an option rather than imposed as a mandatory element. In the event of a conflict between selected guidelines and the provisions of the Model Agreement, the Appendix contains language to subordinate the guidelines.[244]

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[242] MODEL AGREEMENT, Section 1.1.

[243] To assure that the industry guidelines selected bear some imprimatur from an industry-wide organization, the Model Agreement requires that the guidelines be "published" (*i.e.*, generally available and easily identified). Guidelines are also subject to periodic revision. Counsel may wish to consider specifying whether future revisions to any listed guidelines are to be binding upon the parties.

Whether or not adopted by the parties, existing guidelines may nevertheless influence subsequent interpretations of the Model Agreement or the commercial relationship of the parties as a usage of trade.[245] The Commentary thus cautions counsel to evaluate this possibility. However, even if industry guidelines constitute a usage of trade, the ongoing conduct of the parties, whether classified as a course of dealing or as a course of performance, should overcome any possible conflict with the industry guidelines.[246]

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[244] MODEL AGREEMENT, Appendix. The parties may also wish to specify the priority, in the event of a conflict, between selected guidelines.

[245] Under U.C.C. § 1-205(2), a usage of trade is "any practice or method of dealing having such regularity of observance in a place, vocation or trade as to justify an expectation that it will be observed with respect to the transaction in question." Usages of trade "are the framework of common understanding controlling any general rules of law which hold only when there is no such understanding." *Id.* § 1-205 Official Comment 4.

There is room within this definition for "usage agreed upon by merchants in trade codes." *Id.* § 1-205 Official Comment 5. Professor Farnsworth makes a distinction between the express incorporation of "trade codes" into an agreement and the mere existence of these codes. The trade codes become express terms if incorporated, but remain usages of trade if not so incorporated by the parties. A. FARNSWORTH, *supra* note 159, § 7.13, at 507 n.1, 512 n.21. The existence of these codes in a trade may subject a party in the trade to them. U.C.C. § 1-205(3). *See, e.g.*, Foxco Indus., Ltd. v. Fabric World, Inc., 595 F.2d 976, 984 26 U.C.C. Rep. Serv. (Callaghan) 694 (5th Cir. 1979) ("that Fabric World did not know of the industry's usage and custom or of the standards in question is of no moment; the parties to a contract are *presumed* to have intended the incorporation of trade usage in striking their bargain" (emphasis in original)); Tomlinson Lumber Sales, Inc. v. J.D. Harrold Co., 263 Minn. 470, 474, 117 N.W.2d 203, 206 (1962) (knowledge of trade rules rendered the rules binding). *But see* Emco Mills v. Isbrandtsen Co., 210 F.2d 319, 323 (8th Cir. 1954) (no usage of trade where evidence contradictory as to whether rules of grain association reflected trade custom).

B. *Providers*

As companies implement EDI with additional trading partners, the need develops for an improved means of receiving and distributing their electronic messages. The Study indicated that, although many EDI users may have the capability to develop their own network facilities in response to this need, many EDI users enter into service agreements with Providers. Pursuant to these agreements, among other things, Providers function as electronic mail processing systems, and may (a) maintain electronic "mailboxes" into which communications can be placed for trading partners and (b) interconnect with other Providers to permit communication between their respective customers. As a general matter, Providers perform these functions for a lower cost[247] and also offer a variety of value-added services (for example translation, data retention, software licensing and maintenance). Providers have become an important aspect of the general industry practice relating to EDI; they play a significant role in the development of EDI standards and invest considerable effort to improve the reliability and accuracy of EDI. Section 1.2 of the Model Agreement provides a structure for the parties to specify the channels of communication to be used in transmitting the Documents between them.

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[246] *See* U.C.C. §§ 1-205(4) (when it is unreasonable to construe course of dealing and usage of trade to be consistent with each other, "course of dealing controls usage of trade"), 2-208(2) ("course of performance shall control both course of dealing and usage of trade"). *See generally* A. FARNSWORTH, *supra* note 159, § 7.13, at 512, 515; WHITE & SUMMERS, *supra* note 113, § 3-3, at 136-38. *See also* RESTATEMENT (SECOND) OF CONTRACTS § 203(b) & comment d (1981) (Restatement's priority rules).

[247] As EDI volume increases, certain EDI users have established a sufficient level of activity to justify the internal investments in hardware, software and system development required to match the functions performed by Providers.

Transmissions of EDI messages may be made directly between the parties or through Providers. The Model Agreement provides maximum flexibility for each party to choose and maintain the desired channel of communication.[248] In any event, communication choices should be specified in the Appendix. To the extent the parties select Providers, the remaining provisions of Section 1.2 provide a framework for considering those aspects of the trading partners' relationship under the Model Agreement which are related to the use of Providers.[249] To further assure the flexibility for trading partners, the Model Agreement also provides the parties the ability to modify their election to use, not use or change a Provider upon written notice.[250] Those using EDI have, in various instances, made multiple Providers available to their trading partners, or, as EDI use increases, eliminated the use of Providers and internalized their communication network facilities. Accordingly, this provision supports both current and foreseeable practices.[251]

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[248] MODEL AGREEMENT, Section 1.2. The decision to communicate directly or through Providers will be affected by factors such as cost, the nature of available services, the volume of transmissions, the bargaining power of the respective parties and the continued evolution in the technology and its direct availability to EDI users.

[249] Section 1.2.1 requires each party to have contracted with any Provider which is specified for that party. This assures that each party has, in fact, obtained the availability of each designated Provider. The Model Agreement and Commentary do not consider the terms and conditions which would be contained in any such contract. Indeed, the Task Force considered extending the Study to consider the service agreements executed with Providers and the appropriateness for possible uniform responses, whether in the form of statutes, model agreements or otherwise. However, for pragmatic reasons, the scope of the Study was not extended that far; continued interest in that area of the EDI industry remains a possible topic for the future. *See infra* Part VIII.B.

[250] Notice of any modification of a party's election provides a reasonable opportunity for the other party to make corresponding adjustments in operations. Thirty days was considered, based on interviews conducted during the Study, to be a reasonable notice period; however, that period may be adjusted, based on what may be reasonable for a particular relationship.

Several of the EDI agreements considered in the Study included specific allocations between the trading partners of the various costs incurred in connection with the use of communication networks and Providers. Such expenses relate to the basic services of transmission, receipt, data storage and data translation, as well as additional value-added services which may be offered.[252] The Task Force determined that the Model Agreement should reflect the fact that allocation of communication costs is important in establishing EDI as a means of communication.[253] The Model Agreement, as a result, reflects the general industry practice within conventional paper-based trading environments that each party absorb its respective costs of communication (such as, in a paper-based transaction, postage, courier costs and printing expenses), but reserves the flexibility for such costs to be re-allocated based upon negotiation, with the results to be set forth in the Appendix.

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[251] If either party uses more than one Provider, the names and related information should be set forth in the Appendix and, if particular Providers are to be used for particular services or transactions, such indications would be appropriate. If the parties elect to communicate directly, appropriate technical information in the Appendix should be considered.

[252] In the agreements that were reviewed, a common treatment was for the larger EDI user to require its vendors to absorb the costs of Provider services directly.

[253] The fact that trading partners would consider such expenses, and explicitly agree to be responsible for them as a negotiated item, may further confirm their intent for the substance of their EDI activity to be given legal significance.

During the course of the Study, one of the most persistent concerns raised by EDI users related to the impact of system malfunctions or communication errors on the process of contract formation and performance. Additional concern was raised as to whether trading partners were responsible as a matter of law in the event the selected Providers experienced a system failure or caused (or were responsible for) communication errors or failures. Legal concepts of agency prove ineffective in responding to these inquiries. Providers stress that they provide services for the benefit of their customers, and do not act on behalf of the customers as a general matter. However, should a Provider's conduct impact the commercial transactions between trading partners, EDI users wanted some method of allocating the responsibility for the consequences. Accordingly, Section 1.2.3 has been provided, as an option, to help establish contractual responsibility between the trading partners for the conduct of their respective Providers. It should be emphasized that Section 1.2.3, if used, has no impact upon the contractual relationship between any EDI user and its Provider.[254] The provision has the beneficial effect of providing a clear rule for allocating the risk of loss between the parties arising from the conduct of Providers.[255] As drafted, each party assumes responsibility for the acts or omissions of its respective Provider. If both parties use the same Provider in connection with any Document, the Model Agreement imposes responsibility upon the party originating the transmission of that Document.[256]

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[254] The Task Force recognizes that there may be an indirect effect. To the extent a trading partner assumes responsibility for the acts of its Provider, it may seek parallel provisions in its service agreement with Providers.

[255] If Section 1.2.3 is omitted, the parties will have no contractual liability to each other under the Model Agreement for the conduct of their respective Providers, except where such conduct might be attributable to either party (under legal principles of agency or otherwise) and causes such party to breach its respective obligations under the Model Agreement. The Model Agreement does not address the respective right of either party to assert claims against any Provider under any applicable service agreement, nor does the Model Agreement alter the related liability of the parties to each other, if any, pursuant to any applicable legal principles. If a Provider is not used, Section 1.2.3 is not applicable.

C. *System Operations*

In further response to concerns regarding the commitment of EDI users to maintain effective and reliable communication, the Model Agreement imposes an affirmative obligation for each party to provide and maintain equipment, software, services and testing necessary to transmit and receive Documents effectively and reliably.[257] The obligation is reciprocal and allocates the related costs equally.[258] The provision is in accord with the general practice throughout the data processing components of business to remain current in their capability to effectively and efficiently perform their functions. The obligation to "maintain" specified in the Model Agreement is intended to require the parties to update their systems as necessary to assure that effective and reliable communications occur in accordance with prevailing commercial practices and technology. Additional hardware, software or related acquisitions may be required, as well as the possible adoption of new security procedures.

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[256] There may be instances where the parties may want to negotiate over the allocation of risk. For example, in at least one situation studied by the Task Force, EDI services were not provided by an independent third party carrier, but by a provider which was a subsidiary of one of the trading partners. In such a situation, the other trading partner may not want to take the risk of errors by the other party's subsidiary.

[257] MODEL AGREEMENT, Section 1.3.

[258] To the extent the parties agree upon a different allocation of expenses, appropriate changes may be made.

D. *Security Procedures*

Adequate security procedures are recognized by general industry practice as critical to the effectiveness of electronic communication. The application of adequate security assures the integrity of transmission and receiving activities, as well as the quality of the record retention procedures. The use of adequate security enhances the reliability of the records of EDI transactions and the ability to subsequently prove, if necessary, the substantive terms of any underlying commercial transaction.[259]

The Task Force therefore determined that addressing security procedures in the Model Agreement was important. There was a recognition that an EDI user assumes the risk, with respect to the integrity of its own business, of failing of adopt adequate security procedures. But the Study clearly demonstrated that associated with the use of EDI is an expectation that (a) EDI messages received from a trading partner have been duly authorized (an assumption no different than in a paper-trading environment) and (b) one's trading partner has adopted reasonable procedures to retain the integrity of data relating to its own business. Thus, the thrust of the Model Agreement's attention to security procedures is not to impose obligations upon any one trading partner to implement security devices or techniques inappropriate to its business (or to the level of risk that is desired in balancing all relevant factors), but rather to assure that reasonable security procedures are implemented to protect the mutual expectations of the parties. The Task Force determined that the risks against which security procedures should be adopted are not the risks of loss of data (to that extent, each EDI user is responsible for providing adequate protection for its own business) but the risk that improper authorization or access with respect to one participant in the trading relationship could result in damages to the other participant.

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[259] *See* MODEL AGREEMENT, Section 3.3.4 & Comments.

Section 1.4 of the Model Agreement, in response, imposes two obligations. First, each party must use security procedures sufficient to "reasonably" ensure proper authorization of transmissions. If a party fails to adequately secure its transmission activities, it may be liable for any unauthorized transmissions and the consequences thereof. Second, each party must use security procedures sufficient to "reasonably" protect business records and data from improper access. In this case a failure to comply may again result in liability. This second obligation, when properly performed, also gives one party some measure of assurance that its own operations will not be subject to improper access through the systems and operations of the other party. A party failing to meet this second duty would, in addition, likely be estopped from submitting its records as superior to those of the other party, where the other party has properly met its own duty under Section 1.4.[260]

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[260] *See supra* Part VI.B.2.

Security procedures may be far-ranging in both sophistication and detail. Examples include the confidential exchange of Signatures to confirm (from a security point of view) the identity of the parties and the accuracy of Document content; the exchange of encryption keys (by which the content of communications may be scrambled and unscrambled using the exchanged keys); physical control of access to equipment and facilities; and the exchange of identifying information regarding the users and the terminals from which authorized EDI transmissions may originate (which identifying information may be contained as part of the electronic "envelope" in which transmissions are exchanged). Whether in any circumstance procedures which have been adopted or implemented will be considered as "reasonable" will vary based on the size and relative sophistication of the parties, the complexity of the operations of the parties, the nature of the communications and the underlying commercial transactions and additional factors.[261]

The parties may specify in the Appendix additional security procedures in connection with either or both of the explicit requirements of Section 1.4. This provision provides flexibility; as EDI and related technologies continue to advance, increasingly sophisticated security procedures likely will emerge which may be appropriate for one or both parties to implement.[262] Section 1.4 encourages the parties to negotiate the level of security required to enter into Transactions.[263] However, to the extent any duty of care may exist between the parties, liability may also arise at common law, irrespective of the manner in which the parties resolve the treatment of Section 1.4.[264]

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[261] The determination of what constitutes reasonable security procedures also requires an evaluation of the availability of technological protections, their cost of acquisition and the dominance of use within the appropriate industry. In The T.J. Hooper, 60 F.2d 737, 740 (2d Cir. 1932), Judge Learned Hand remarked, in evaluating the absence of receiving radio sets from tug boats, "there are precautions so imperative that even their universal disregard will not excuse their omission."

E. *Confidentiality*

Closely related to the discussion of adequate security, the Study discovered concerns regarding the confidential nature of commercial data communicated through EDI. Several of the EDI agreements included in the Study contained provisions that the information included in EDI transmissions was confidential and not to be disclosed. Several participants in interviews conducted by members of the Task Force re-confirmed the view that they considered the information included in EDI communications to be confidential. Accordingly, the proposal was made on more than one occasion that the Model Agreement should affirmatively establish a requirement of confidential treatment for all EDI data.

Fundamentally, however, the Task Force determined that EDI is, in its essence, an enhanced means of communication. EDI does not change the nature of the data, nor does EDI alter the proprietary value of that information to the respective trading partners. EDI simply moves the information quickly and more accurately, and provides a more efficient means of receiving, processing and retaining the data. In evaluating existing paper-based commercial practices, the Study also determined that, in the absence of a master purchasing agreement containing extensive terms and conditions (which may include provisions on confidentiality), few businesses make express provision for the confidentiality of the information contained on their standard printed forms.

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[262] The Commentary encourages parties to consider specifying in the Appendix any existing, generally accepted security procedures, any special industry standards and any proprietary or unique security procedures required by the underlying commercial relationship.

[263] *See* MODEL AGREEMENT, Section 3.3 & Comment 5.

[264] Such common law principles continue to be applicable to commercial transactions. *See* U.C.C. § 1-103.

As a result, Section 3.2 of the Model Agreement, therefore, initially provides that no information contained in any Document shall be considered confidential. However, there are three exceptions. First, Signatures, as adopted by the parties pursuant to Section 1.5, are expressly provided special protection.[265] Second, an exception is made for circumstances where confidential status has been afforded by the written agreement between the parties.[266] Third, the Model Agreement recognizes that the law imposes confidentiality obligations with respect to certain types of information, and assures that the Model Agreement's provisions do not contradict the legal status of such information.[267] If confidential treatment is to be provided with respect to any information contained in any Documents, Section 3.2 may be replaced by appropriate provisions relating to the scope and duration of any obligations, as well as appropriate remedies.[268] .

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[265] MODEL AGREEMENT, Section 3.2. Neither party is permitted to disclose to any unauthorized person the Signatures of the other. *Id.*, Section 1.5. This provision does not prevent one party from using the same Signature in an unlimited number of different trading relationships (which, of course, is analogous to existing paper-based practices, where one individual within a corporation may be authorized to manually sign purchase orders or similar documents with respect to a multiplicity of vendors).

[266] This exception accords with existing commercial practices identified in the Study. *See also* MODEL AGREEMENT, Section 3.1 *supra* Part VI.C.

F. *Miscellaneous Provisions*

In drafting the Model Agreement, the Task Force considered what provisions in addition to those previously discussed in this Report would be appropriate to assure that the administrative aspects of the Model Agreement were adequately addressed. The resulting product is set forth in Sections 4.1 and 4.4. In this respect, the Model Agreement does not reflect current practices in commercial contract drafting since many attorneys include additional provisions not contained in the Model Agreement. The Task Force determined that these additional matters did not generally impact upon the use of EDI in commercial practice. Accordingly, except as provided in Sections 4.1 and 4.4, no effort was made to determine an appropriate denominator for these provisions -- counsel may include the "boilerplate" provisions deemed appropriate for each particular agreement.

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[267] *Id.* Section 3.2. Examples include the law relating to trade secrets, any court order imposing confidentiality obligations, as well as statutory provisions such as 47 U.S.C.A. § 605 (1962 & Supp. 1989) (preventing disclosure of intercepted radio communications).

[268] The Task Force did not consider it appropriate to include optional confidentiality language in substitution for the existing provisions. If only certain information is to be considered as confidential, counsel should prepare alternate provisions as to the manner in which, in an electronic environment, such information is to be designated as confidential. The Task Force considered several techniques capable of being implemented in an electronic environment which would permit information to be designated as confidential on a transaction-by-transaction basis by including an appropriate designation (through the use of special codes). The use of such techniques would likely satisfy the requirement of Section 3.2 for "written agreement" if the parties intend for that effect. *See* MODEL AGREEMENT, Section 1.1 Comment 3.

Section 4.1 provides for the ability of the parties to terminate the Model Agreement upon prior written notice. However, it assures the non-terminating party an appropriate opportunity to establish (or re-institute) alternative procedures of communication in the event EDI is eliminated as an available channel in which to conduct trading activity.[269] Any notice of termination given under Section 4.1 will not affect obligations relating to the underlying commercial transactions.

The Model Agreement, in Section 4.4, also provides for the selection of applicable governing law. In addition to customary factors that may be considered, the Study also identified an additional variable for counsel to consider. As society continues to incorporate computers into its activities and affairs, additional laws are being developed relating to such matters as computer privacy, the criminal aspects of data base access and similar issues. Section 4.4 encourages the parties to consider these additional factors in selecting the applicable governing law.[270]

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[269] A 30-day notice period is provided, which resulted from a determination by the Task Force of general industry practice. *But see* MODEL AGREEMENT, Section 1.2.1 Comment 5.

[270] With regard to choice of governing law in the international context, see generally Garro, *supra* note 119, at 448; Lowry, *Transborder Data Flow: Public and Private International Law Aspects*, 6 HOUSTON J. INT'L L. 159 (1984).

G. *Unaddressed Topics*

Many provisions as to the technical and business elements of an EDI relationship may be included in a trading partner agreement. In attempting to find the proper denominator for the Model Agreement, a number of those provisions were excluded by the Task Force in order to maximize the potential utility of the Model Agreement.

An important omission deals with terms of payment. The technology has existed for some time permitting electronic funds transfer ("EFT") between banking and similar institutions, through the National Automatic Clearing House Association and Fed Wire. However, inclusion of specific electronic funds transfer payment provisions in the Model Agreement was determined by the Task Force to be inappropriate for two reasons. First, many current EDI implementations have only gone so far as to eliminate the paper component of purchasing activity and not payment activity. Until the technology for integrating EDI participants into EFT systems becomes more widely available, provisions in the Model Agreement seemed premature. Second, to the extent that trading partners have the capability to effect electronic funds transfers, such provisions for payments may be included as additional terms and conditions in the Appendix pursuant to Section 3.1 of the Model Agreement. Several members of the drafting team anticipate that EDI and EFT are moving toward an integrated role in commerce.[271] The integration issue, however, is controversial and the impact of EDI on the transaction structures contemplated by the new Article 4A will need to be considered before further movement occurs.

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[271] The National Automatic Clearing House Association has established among its members a Bankers' EDI Council which is addressing the potential benefits of integrating EDI and EFT. Several commercial banks have entered the EDI industry as Providers, either directly providing communication services or by accessing their customers into the proprietary network of other Providers.

In addition, the Model Agreement excluded other provisions which counsel implementing the Model Agreement may wish to consider in preparing trading partner agreements for particular relationships. This Report has identified many options the Task Force considered in drafting the Model Agreement. In addition, the Task Force considered but did not include the following: (a) affirmative requirements for the storage and retention of EDI data records; (b) a presumption that any person affixing the Signature of a party has the authority to do so; (c) transmission schedules, acceptance windows and additional time-sensitive factors which may not be appropriately considered as a part of the general provisions, in connection with damages and other losses suffered as a result of any breach of the obligations arising under the Model Agreement; and (e) obligations to use best efforts to re-establish effective communication in the event any natural emergency or other disaster renders the existing systems inoperative.

VIII. FUTURE LEGAL DEVELOPMENTS

This Report, together with the Model Agreement, represents an initial effort to begin to understand, and accommodate within existing legal structures, the changes in commercial practices resulting from the use of EDI. EDI is no longer an emerging technology; EDI is a technology which is implemented today to realize a competitive advantage, but which will eventually be considered a competitive necessity. EDI facilitates the integration of systems for the exchange of information and paves the way for further advances in efficiency and reliability. The commercial use of EDI has emphasized the need for existing laws to embrace principles of flexibility sufficient to accommodate the advances of technology on a continuing basis. The Model Agreement represents a first step toward that important goal. The Study has observed broad commercial use of EDI - and the potential utility of the Model Agreement to support those uses - as well as highlighted the additional areas of commercial law upon which technology will continue to have an impact.

A. *Optional Uses of the Model Agreement*

In preparing the Model Agreement, the Task Force recognized that many commercial activities, other than domestic contracts for the sale of goods, occur through the use of EDI. There appears to be interest in expanding the scope of the Model Agreement for use in connection with service contracts. For example, EDI has been a significant factor in maintaining the competitive capability of the trucking, rail transportation and ocean shipping industries. In addition, EDI has been implemented in connection with re-insurance agreements between insurance companies and will soon be introduced in the mortgage loan industry as a means of exchanging credit and other information relied upon in processing and approving loan applications. This Report has also attempted to focus upon the potential of EDI for international commercial transactions; such use has begun and will continue to expand at a dramatic rate.

The Model Agreement may be readily adapted to support all of the foregoing activities. The need for efficient and reliable communication is common to all those who use EDI, irrespective of the particular commercial application of the technology. The principles of receipt, verification and the use of Acceptance Documents, as well as the need to account for the commercial decisions inherent to adopting EDI, have merit beyond the contract formation process contemplated by the Model Agreement. Counsel familiar with the law applicable to any particular business can easily adapt the provisions of Section 3.1 to assure that the introduction of EDI does not disrupt the underlying business relationships.

B. *Topics of Further Inquiry*

Outside of contracts for the sale of goods, EDI is altering the manner in which other types of commercial transactions occur. A few examples are illustrative. Electronic letters of credit are now routinely exchanged on a national and international basis. Similarly, electronic bills of lading have been used, particularly in connection with ocean shipping, for some time. Relating to Article 9, many government filing offices, beseiged by the overwhelming number of filings of financing statements, have adopted electronic record retention programs; discussions have begun regarding electronic U.C.C. filings. Although no significant litigation arising from the use of EDI has occurred, which may be an indication of the reliability of the technology, the need for appropriate legal accommodation of the resulting commercial practices remains. The effort to make that accommodation will not be insubstantial; merely evaluating the role of writings and signatures throughout all articles of the U.C.C. represents a significant challenge.

In that respect, further developments in electronic commercial practices may continue to challenge existing legal structures. First, the further integration of EDI with the use of electronic funds transfer systems appears a significant, though uncertain, possibility. The interactive consequences among various components of related federal and state laws invite potentially challenging discussions. Second, the number and variety of Providers continues to increase. Additional related industries, whether branching from those in existence (such as hardware and software producers) or evolving from the technology itself (such as record retention services), will continue to develop. The need to monitor these developments, and analyze whether responses from the legal sector are appropriate must be recognized.

Improved interdisciplinary cooperation among the legal and technology sectors should be considered. In many instances, related business objectives may be satisfied, to one extent or another, by either technological solutions, contractual provisions or a combination of both. The legal community, to be effective in its efforts, may wish to evaluate working more closely with those designing and implementing the technology as (a) objective standards for measuring what constitutes commercially reasonable security procedures, (b) appropriate requirements for data storage and retention and (c) new evidentiary standards (which strike an effective balance in determining the admissibility of electronic records) are each developed in turn.

The growth of EDI in international commerce presents similar opportunities for legal reform. Currently, efforts are being undertaken under the auspices of the United Nations to develop standards for electronic data interchange on the international level.[272] Although the legal issues involved in such efforts have received some attention,[273] many of these legal issues remain for further consideration.

Work conducted by the Task Force has convinced its members that technology will continue to challenge the existing boundaries of commercial law by altering the commercial practices which are purportedly within the scope of regulation. Although this Report, together with the Model Agreement, may represent a first step, and will hopefully contribute to further efforts dealing with EDI, new electronic commercial practices will continue to evolve which will require new analysis. The Task Force endorses the continued effort and recommends the development of an ongoing comprehensive strategy to accomplish appropriate legal reform.

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[272] These efforts are being undertaken by the Working Party on Facilitation of International Trade Procedures of the Committee on the Development of Trade of the Economic Commission of Europe.

[273] In September 1984, the United States submitted a paper outlining certain problems posed by the use of EDI to the Economic Commission for Europe, Committee on the Development of Trade, Working Party on Facilitation of International Trade Procedures. *Legal Aspects of Trade Data Interchange*, TRADE/WP.4/R.298/Rev. 1, CO-ORDINATION OF WORK: LEGAL ASPECTS OF AUTOMATIC DATA PROCESSING: NOTE BY THE SECRETARIAT, A/CN.9/238, annex II, Yearbook 1983, Part two, Chap. V, Sec. D. Partly on the basis of that report, the United Nations Commission on International Trade Law placed the topic of legal aspects of automatic data processing on its programme of work as a priority item. COORDINATION OF WORK: LEGAL ASPECTS OF AUTOMATIC DATA PROCESSING: REPORT OF THE SECRETARY-GENERAL, A/CN.9/254. Yearbook 1984, Part Two, Chap. V, Sec. D. Since then, the International Chamber of Commerce has developed a Uniform Code for Interchange of Data (UNCID), which is only the first step in confronting such issues. At the March 1990 meeting of the Working Party, the United States again raised the issue of the legal problems associated with the use of EDI, and urged that these problems be explored.

THE COMMERCIAL USE OF ELECTRONIC DATA INTERCHANGE -- A REPORT

MODEL
ELECTRONIC DATA INTERCHANGE
TRADING PARTNER AGREEMENT
AND
COMMENTARY

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AND
COMMENTARY

Prepared by
the

Electronic Messaging Services Task Force

Subcommittee on
Electronic Commercial Practices
Uniform Commercial Code Committee
Section of Business Law

American Bar Association

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FOREWARD

This Model Electronic Data Interchange Trading Partner Agreement and Commentary were prepared by the Electronic Messaging Services Task Force under the auspices of the Subcommittee on Electronic Commercial Practices of the Uniform Commercial Code Committee, Section of Business Law, of the American Bar Association.

The Model Agreement and Commentary are to be used by attorneys in advising clients who are establishing commercial trading practices which implement electronic data interchange ("EDI"). The format of the Model Agreement and Commentary is considered an appropriate manner in which to identify the issues arising in EDI and to suggest uniform approaches in response. However, it is not intended that the Model Agreement represent the only form in which those issues may be addressed by counsel considering the underlying business relationships. Those reviewing the Model Agreement and Commentary are strongly encouraged to consider and study their provisions and to use independent judgment as to the effectiveness of the provisions of the Model Agreement and the advisability of their use in particular transactions.

The Model Agreement and Commentary reflect the views of those involved in their preparation; neither the contents of the Model Agreement and Commentary, nor the opinions expressed therein, represent the views, in whole or in part, of the American Bar Association or any part thereof.

Background

Beginning in the early 1970's, EDI was introduced as a method by which business data could be communicated electronically between computers in standardized formats in substitution for conventional paper-based documents. The commercial implementation of EDI to effect the purchase and sale of goods has experienced exponential growth, and has begun to change the manner in which contracts are negotiated and created.

In April 1987, the Subcommittee on the Scope of the Uniform Commercial Code, of the Uniform Commercial Code Committee, Section of Business Law, of the American Bar Association, through the Electronic Messaging Services Task Force, initiated a study to examine the effects of electronic commerce upon fundamental principles of contract law and related legal issues. In 1988, that Subcommittee issued a responsive report, entitled *Electronic Messaging* (ABA Publication No. 507-0210, 1988) and authorized a further examination of EDI and other electronic messaging systems (a) to determine how contract formation and related issues were being addressed by existing agreements, (b) to identify possible uniform approaches to those issues, and (c) to develop a means of communicating to practicing attorneys the issues which should be considered when drafting agreements for parties conducting business through the use of EDI.

In July 1989, in recognition of the continued expansion of electronic commerce and the legal issues which arise as a result, a new Subcommittee on Electronic Commercial Practices was organized. In October 1989, the Electronic Messaging Services Task Force issued to the Subcommittee on Electronic Commercial Practices and to the Subcommittee on the Scope of the Uniform Commercial Code a report entitled *The Commercial Use of Electronic Data Interchange - A Report*, 45 Bus. Law.1645 (June 1990), which includes the Model Agreement and Commentary. Counsel is encouraged to review that report in connection with the use of the Model Agreement.

Members of the Task Force responsible for the preparation of the Model Agreement and Commentary were: Michael S. Baum (Cambridge, Massachusetts), Philip V. Otero (Rockville, Maryland), Jeffrey B. Ritter (Columbus, Ohio), Thomas J. McCarthy (Wilmington, Delaware) and Amelia H. Boss (Philadelphia, Pennsylvania). The Task Force also wishes to recognize the invaluable comments and support provided by Patricia B. Fry (Grand Forks, North Dakota), Chair of the Subcommittee on Electronic Commercial Practices.

MODEL
ELECTRONIC DATA INTERCHANGE
TRADING PARTNER AGREEMENT

THIS ELECTRONIC DATA INTERCHANGE TRADING PARTNER AGREEMENT (the "Agreement") is made as of __________, 19__, by and between ________________ ("ABC"), a __________ corporation, with offices at ____________________ and ________________ ("XYZ"), a __________ corporation, with offices at ________________________.

RECITALS

ABC and XYZ desire to facilitate purchase and sale transactions ("Transactions") by electronically transmitting and receiving data in agreed formats in substitution for conventional paper-based documents and to assure that such Transactions are not legally invalid or unenforceable as a result of the use of available electronic technologies for the mutual benefit of the parties.

NOW THEREFORE, the parties, intending to be legally bound, agree as follows:

Comment

1. The scope and purposes of the Agreement are as follows:

- The Agreement is to be used between commercial trading partners; the Agreement is not intended for use in consumer transactions.
- The Agreement is to be used only in connection with domestic purchase and sale transactions involving goods, as contemplated by Article 2 of the Uniform Commercial Code (the "Code"). Counsel may wish to consider the Agreement in developing suitable provisions for use in other types of EDI relationships, such as those which are international in scope, or which involve the performance of services (including transportation and shipping activities).
- The Agreement is intended to facilitate the commercial relationship of the trading parties. The Agreement does not generally advocate particular

solutions to what are essentially business issues; freedom of contract is encouraged.

- The Agreement does not attempt to resolve all aspects of commercial trading relationships which are within the scope of Article 2 of the Code. Counsel is cautioned to consider the additional issues which arise from the underlying Transactions (issues which are not unique to the use of EDI) and to develop appropriate responses.

2. Certain provisions of the Agreement have the effect of varying the application of provisions of Article 2. In this respect, the Agreement implements two of the fundamental purposes of the Code, namely (a) to simplify, clarify and modernize the law governing commercial transactions, and (b) to permit the continued expansion of commercial practices through custom, usage and agreement of the parties. See UCC § 1-102(2). In order to accomplish these purposes, the Code is to be liberally construed and applied. See UCC § 1-102(1). This flexibility is intended to allow the underlying principles to be developed in light of unforeseen and new circumstances and practices. See UCC § 1-102, comment 1. Freedom of contract is also an important principle of the Code. See UCC § 1-102(3) and § 1-102, comment 2. Thus, parties are free to vary by agreement the effect of all provisions of the Code, except to the extent the general obligations of good faith, diligence, reasonableness and care may not be displaced. See UCC § 1-102(3) and § 1-102, comment 3.

3. The Recitals set forth the mutual intention of the parties for valid and enforceable obligations to result from the electronic communication of data in substitution for conventional paper-based documents. See also Sections 1.1, 2.1 and 3.3, and the Comments thereto. The execution and delivery of the Agreement and the performance of Transactions, together with the conduct of the parties in accordance with its terms, should be considered sufficient to show the existence of contracts for the sale of goods. See UCC § 2-204.

Drafting Considerations

1. The Agreement does not designate either party as buyer or seller. Either party may, therefore, purchase or sell goods in accordance with its provisions, unless appropriate modifications are made. For example, counsel may wish to add to the Appendix, as to each Document (as defined in Section 1.1), which party may be the "Sender" of that Document. See Sections 1.1 and 3.1, and the Comments and Drafting Considerations thereto.

2. Consider whether either or both of the parties are merchants, and the implications under the Code of that classification on the underlying commercial relationship and the rules of conduct which are defined by the Agreement. See UCC §§ 2-104(1) and 2-104(3). Note that if the parties are not corporations, appropriate changes should be made.

Section 1. Prerequisites.

1.1. Documents; Standards. Each party may electronically transmit to or receive from the other party any of the transaction sets listed in the Appendix, [transaction sets which the parties regularly transmit] and transaction sets which the parties by written agreement add to the Appendix (collectively "Documents"). Any transmission of data which is not a Document shall have no force or effect between the parties unless justifiably relied upon by the receiving party. All Documents shall be transmitted in accordance with the standards [and the published industry guidelines] set forth in the Appendix.

Comment

General:

1. Establishing an EDI trading relationship, by necessity, involves a series of decisions, primarily technical in nature, by both parties regarding: (a) the formats in which the data will be transmitted, and the standards and possible implementation guidelines to be adopted in connection with such formats; (b) the possible selection of third-party service providers (as well as the various business decisions required in connection with establishing such relationship); and (c) the development and maintenance of appropriate computer and communication systems and security procedures. Section 1 and the Appendix provide a framework for the parties to mutually structure these decisions. Compliance with the provisions of Section 1 will confirm their intent to give legal significance to the transmissions. See Sections 2.1, 2.3 and 3.3.3, and the Comments thereto.

2. Implementing EDI should also involve careful evaluation of existing internal business procedures and controls of the parties relating to paper-based commercial practices, and consideration of the extent to which such procedures and controls should be strengthened and/or modified in connection with the establishment of an electronic communication and trading environment. For example, authorizations to release purchase orders or approve payments, as well as rules regarding security and confidentiality, should be reviewed. See also Sections 2.1 and 3, and the Comments thereto.

3. This Section contains the first use of "by written agreement" or "in writing" in the Agreement. The Agreement provides the flexibility to allow notices, modifications, amendments or other communications required or permitted by the Agreement to be "in writing" to consist of electronic transmissions, but only if the transmissions satisfy the criteria of the Agreement for "Signed Documents" (as defined in

Section 3.3.2). Alternatively, the Agreement could specify paper-based writings are required, if the parties consider it appropriate.

Documents:

4. "Transaction sets" define the types of data which the specified transmission must contain and the format in which the data must appear. Transaction sets function like conventional paper document forms, and include purchase orders, requests for quotation, purchase order acknowledgements, invoices, remittance advices and purchase order change requests. In addition, transaction sets exist in which "free text" may be communicated as a segment; this type of transaction set would be appropriate for notices, modifications or amendments (such as those described in Comment 3 above).

5. The Agreement generally applies only to those transmissions of data classified as "Documents" under Section 1.1. At a minimum, transaction sets listed in the Appendix (including subsequent additions) are Documents.

6. The Agreement provides, as an option, for transaction sets which are not listed in the Appendix but which are regularly transmitted to be considered as Documents. No attempt to define "regularly transmit" has been made. However, see Section 3.3.3 (and UCC § 2-208).

7. The "regularly transmit" option should be considered when both parties wish to give effect to new transaction sets without express prior agreement. Parties who wish to retain tight control over which transmissions qualify as Documents under Section 1.1 will eliminate the "regularly transmit" option from the Agreement. Note that, if the "regularly transmit" option is not included, regularly transmitted transaction sets may still be given effect, though inconsistent with the terms of this Agreement. See UCC §§ 1-103, 2-208 and 2-209. In addition, such parties may wish to eliminate from the second sentence of Section 1.1 the phrase " . . . unless justifiably relied upon by the receiving party" or make other modifications to, or entirely delete, that sentence. Note, however, that such changes may not effectively prevent a transmission which is not a Document from having legal effect, where the receiving party has under the circumstances, including the language in the Agreement, justifiably relied on that transmission. See Comment 6 above and Comment 8 below.

8. The second sentence of Section 1.1 is not intended to alter the law of reliance; the provision simply prevents a party which has transmitted data from avoiding the legal effect of the receiving party's justifiable reliance merely because the format had not been previously classified as a Document. However, note that the remaining provisions of the Agreement relating to Documents are not applicable in those circumstances. See, for example, Sections 1.2.3, 2.1, 3.3, and 4.6.

Standards:

9. "Standards" are the uniform specifications for the electronic

interchange of business data and include provisions of the structure and format of data as well as the transmission of the formatted data. There are also standards, among other things, for certain security and communication procedures.

10. The selection of applicable standards is a matter of some flexibility. The parties may mutually select and utilize one or more sets of recognized standards, or, within certain technical limits, customize those standards to their mutual benefit. Existing technology also permits each party to adopt a different standard for transmission of a Document, with Providers (as defined in Section 1.2.1) subsequently conforming the different formats to each party's adopted standard.

11. Virtually all standards for EDI include detailed technical requirements to facilitate EDI, including transaction sets, data dictionaries, segment dictionaries and other uniform controls. Pursuant to the provisions of the Appendix, the selection by the parties of applicable standards acts to incorporate by reference these additional requirements. Should the parties desire to exclude or modify any of such requirements, such changes may be made in the Appendix.

Guidelines:

12. "Published industry guidelines" contain recommended procedures and implementation guidelines for the use of EDI within particular industry groups (recent examples include guidelines of the automotive, chemical and pharmaceutical industries). In contrast to standards, which require compliance for the effective interchange of data, guidelines generally are intended to aid implementation among trading partners. The Agreement, as an option, provides the parties the ability to require compliance with any guidelines which they mutually adopt and specify.

13. Counsel should carefully evaluate any available guidelines to assure that any conflicts between the guidelines and the standards, or between different guidelines, are understood and resolved. The adoption of certain guidelines, for example, may affect the process of contract formation in an unintended manner, since several current guidelines suggest certain procedures (e.g., which Documents are acceptable responses to other specified Documents) which may be in conflict with what the parties mutually negotiate and specify in the Appendix. Language in the Appendix has been included to avoid this result by subordinating the content of any selected guidelines to the provisions of the Agreement.

14. Counsel should evaluate whether any existing guidelines, whether or not adopted, may be considered, in any interpretation of the Agreement, as a usage of trade to be considered with respect to any Transaction. See UCC § 1-205(2).

Drafting Considerations

1. The parties should identify and list the transaction sets which may be transmitted between them

as Documents. The Appendix is structured in accordance with most common methods of identifying Documents. However, proprietary Documents, not based upon any particular standard, may also be utilized and listed.

2. In specifying Documents in the Appendix, it is recommended that the parties agree that any selected Document be communicated only in the then current release version or the release version immediately preceding the then current release version. Consistent with the provisions of Section 1.3, this will require the parties to periodically install new release versions of software corresponding to new revisions of the applicable standards. See Section 1.3, and the Comments thereto. Counsel may wish to consider establishing a time frame in which any such releases must be installed.

3. In completing the Appendix, any transaction set listed as an Acceptance Document (pursuant to Section 2.3) should also be listed as a Document. See Section 2.3, and the Comments thereto.

4. The Agreement permits any Document specified in the Appendix to be transmitted by either party. If this result is not desired, appropriate restrictions should be specified in the Appendix. See Recitals, Drafting Consideration 1.

5. If the parties do not wish transmissions which are not Documents to be given any force or effect, appropriate changes may be made. See Comments 7 and 8 above.

1.2. Third Party Service Providers.

1.2.1. Documents will be transmitted electronically to each party either, as specified in the Appendix, directly or through any third party service provider ("Provider") with which either party may contract. Either party may modify its election to use, not use or change a Provider upon 30 days prior written notice.

Comment

1. Section 1.2 provides the structure to specify the channel(s) of communication to be used in transmitting Documents between the parties. Transmissions may be made directly between the parties or through Providers. To the extent Providers are selected, Section 1.2 provides a framework for considering those aspects of the trading partners' relationship under the Agreement which are related to the use of Providers.

2. Among other things, Providers function as electronic mail processing systems and may (a) maintain electronic "mailboxes" into

which communications can be placed for trading partners, and (b) interconnect with other Providers to permit communication between their respective customers. Providers have become an important aspect of general industry practice relating to EDI.

3. Section 1.2.1 provides maximum flexibility for each party to choose and maintain the desired channel of communication. Decisions to communicate directly or through Providers will be affected by factors such as cost, the nature of available services, the volume of transmissions, the bargaining power of the respective parties and continued evolutions in technology.

4. Counsel should note that Section 1.2.1 requires the parties to have contracted with any Provider specified for them in the Appendix. This assures that each party has obtained the availability of each such Provider.

5. Notice of any modification of a party's election provides a reasonable opportunity for the other party to make corresponding adjustments in operations. Generally, 30 days is considered, consistent with general industry practice, as a reasonable notice period; however, that period may be adjusted, based on what may be reasonable for a particular relationship.

Drafting Considerations

1. If the parties elect to communicate directly, counsel may wish to consider specifying in the Appendix appropriate technical information.

2. If either party uses one or more Providers, the names and related information of such Providers are to be set forth in the Appendix. If Providers are to be used for particular services or transactions, such indications would be appropriate in the Appendix.

1.2.2. Each party shall be responsible for the costs of any Provider with which it contracts, unless otherwise set forth in the Appendix.

Comment

1. Section 1.2.2 permits the parties to allocate between them the various expenses incurred in the use of Providers. Such expenses relate to the basic services of transmission, receipt, data storage, and data translation as well as additional services which may be offered. Counsel should consider the effect of this Section 1.2.2 when Providers offer a service permitting the parties to automatically agree on-line as to the allocation of these types of expenses.

2. The Agreement is consistent with the general industry practice within a paper-based environment that each party absorb its respective communication costs (i.e., postage, courier costs, and printing expenses).

Drafting Considerations

To the extent the parties allocate costs in a manner other than as provided in Section 1.2.2, such allocation may be added in the Appendix; no change in the Agreement is required.

[1.2.3. Each party shall be liable for the acts or omissions of its Provider while transmitting, receiving, storing or handling Documents, or performing related activities, for such party; provided, that if both the parties use the same Provider to effect the transmission and receipt of a Document, the originating party shall be liable for the acts or omissions of such Provider as to such Document.]

Comment

1. This optional Section permits the parties to establish contractual responsibility between them for the conduct of their respective Providers. This Section, if used, has the effect of providing a clear rule within the Agreement for allocating the risk of loss between the parties arising from the Provider's conduct. If this Section is omitted, the parties will have no contractual liability to each other under the Agreement for the conduct of their respective Providers, except where such conduct is attributable to either party and causes such party to breach the provisions of the Agreement.

2. The originating party is responsible for the acts of a shared Provider on the basis that such party initiates the final action, with respect to any Document, to use the Provider.

3. The Agreement does not address the respective right of either party to assert claims against any Provider under any applicable service contract, nor does the Agreement alter the liability of the parties to each other, if any, pursuant to any applicable legal principles.

Drafting Considerations

1. Liability arising under Section 1.2.3 is subject to the exclusion of damages contained in Section 4.6; counsel should consider whether this result is appropriate. The possible effect of Section 4.5 (Force Majeure) to relieve a party of liability under Section 1.2.3 should also be evaluated.

2. Note that Section 1.2.3 does not act to allocate liability between the parties where a Provider is not used. *See* Section 1.2.1.

3. This Section, if used, may be modified to allocate liability in any other manner upon which the parties agree.

1.3. System Operations. Each party, at its own expense, shall provide and maintain the equipment, software, services and testing necessary to effectively and reliably transmit and receive Documents.

Comment

1. This Section imposes a reciprocal obligation upon the parties to support effective and reliable communications, and allocates the related costs.

2. Consistent with general industry practice, the obligation to "maintain" is intended to require the parties to update the specified items as necessary to assure that effective and reliable communications are maintained in accordance with prevailing commercial practices and technology. See Section 1.1, and the Comments thereto. Section 1.3 may require, therefore, additional hardware or software acquisitions by the parties as well as the possible adoption of new security procedures satisfying the requirements of Section 1.4.

3. The conduct of the parties in establishing and maintaining effective and reliable communication enhances the reliability of Documents (including their content). See Sections 2.1, 3.3, and the Comments thereto.

Drafting Considerations

To the extent the parties agree upon a different allocation of expenses, appropriate changes may be made.

1.4. Security Procedures. Each party shall properly use those security procedures, including those specified in the Appendix, if any, which are reasonably sufficient to ensure that all transmissions of Documents are authorized and to protect its business records and data from improper access.

Comment

1. Adequate security procedures are recognized by general industry practice as critical to the efficacy of electronic communication. This Section imposes affirmative duties to use security procedures to ensure the reliability of the communication systems and resulting business records. The use of adequate security enhances the reliability of those records and enhances the ability to prove the substantive terms of any underlying commercial transaction. See Section 3.3.4, and the Comments thereto.

2. This Section imposes two obligations. First, each party must use security procedures sufficient to "reasonably" ensure proper authorization of transmissions. If a party fails to adequately secure its transmission activities, it may be liable for any unauthorized transmissions, and the consequences thereof. Second, each party must use security procedures sufficient to "reasonably" protect business records and data from improper access. In this case a failure to comply may again result in liability. This second obligation, when properly performed, also gives one party some measure of assurance that its own operations will not be subject to improper access through the systems and operations of the other party. A party failing to meet this second duty would, in addition, likely be estopped from submitting its records as superior to those of the other party, where the other party has properly met its own duty under Section 1.4.

3. Security procedures may be far-ranging in both sophistication and detail. Examples include the confidential exchange of Signatures (see Section 1.5) to authenticate the parties and the content of Documents which are transmitted or received, the exchange of encryption keys (by which the content of communications may be scrambled and unscrambled only pursuant to the exchanged keys), physical control of access to equipment and facilities, and the exchange of identifying information regarding the terminals from which authorized EDI transmissions may originate (which identifying information may be contained as part of the electronic "envelope" in which transmissions are exchanged).

4. Whether in any circumstance procedures which have been adopted or implemented will be considered as "reasonable" will vary based on the size and relative sophistication of the parties, the complexity of the operations of the parties, the nature of the communications and the underlying commercial transactions and additional factors. This Section provides an objective but flexible test by which to measure the conduct of the parties. See UCC § 1-204(2).

5. Under this Section, the parties may specify in the Appendix additional security procedures in connection with either or both of the requirements described in the above comments. This provision provides flexibility; as EDI and related technologies continue to advance, increasingly sophisticated security procedures will likely emerge which may be appropriate for one or both parties to implement. Parties should consider specifying in the Appendix any existing, generally accepted security procedures, special industry standards and any proprietary or unique security procedures required by the underlying commercial relationship.

6. This Section encourages the parties to negotiate the level of security required to induce them to enter Transactions. See Section 3.3, Comment 5. However, to the extent any duty of care may exist

between the parties, liability may also arise at common law. See UCC § 1-103.

7. This Section relates to obtaining access to business records and data; the use of such records and data is covered by Section 3.2. Counsel should consider the relationship between security procedures required by Section 1.4 and the treatment of confidentiality in Section 3.2.

Drafting Considerations

Counsel should note that the provisions of Section 4.6 (Exclusion of Damages) do not apply to any breach of the obligations arising under Section 1.4.

1.5. Signatures. Each party shall adopt as its signature an electronic identification consisting of symbol(s) or code(s) which are to be affixed to or contained in each Document transmitted by such party ("Signatures"). Each party agrees that any Signature of such party affixed to or contained in any transmitted Document shall be sufficient to verify such party originated such Document. Neither party shall disclose to any unauthorized person the Signatures of the other party.

Comment

1. This Section establishes a mechanism for the adoption by each party of an electronic signature by which each Document may be signed. UCC § 1-201(39) defines "signed" to include ". . . any symbol executed or adopted by a party with present intention to authenticate a writing (emphasis added)." Use of a Signature is important to establishing the validity of any EDI communication. See Section 3.3, and the Comments thereto.

2. This Section requires each party to adopt a Signature, but retains considerable flexibility as to what symbols or codes shall be adopted. The decision of each party will be made in light of existing technology, the relative sophistication of the parties, the requirements of applicable standards and any security procedures which are in use. A party may select as its Signature the use of its name on a Document (similar to a form of purchase order imprinted with the buyer's name and containing no other authorized signature). What is important is that the use of the adopted symbol or code reflect the intent to authenticate required by the Code. Regulating the use of any Signature may also be part of security procedures required by the Agreement; counsel should evaluate any such procedures to assure that the required intent to authenticate is preserved.

3. The electronic signature of any party may change from time to time, in order to protect its confidential character. Accordingly, the Appendix does not provide for disclosure of any Signature, but relies on general industry practice for the exchange of Signatures by other means of communication. If any Signature is used by a party as part of adopted security procedures the practice of periodically changing the Signature could be considered as consistent with the obligations - of such party under Section 1.4 to use reasonable security procedures.

4. The last sentence of Section 1.5 prohibits only disclosure of the Signatures of the other party. If security procedures required by the Agreement relate to non-disclosure of Signatures, a party which discloses its own Signature to an unauthorized person may breach the provisions of Section 1.4.

Section 2. Transmissions.

2.1. Proper Receipt. Documents shall not be deemed to have been properly received, and no Document shall give rise to any obligation, until accessible to the receiving party at such party's Receipt Computer designated in the Appendix.

Comment

1. The increased speed and accuracy of electronic commerce fundamentally differ when compared to contract formation practices in a paper-based environment. Parties engaging in electronic commerce have the ability to efficiently determine whether a particular transmission has been received by the other party, whether any transmission is inconsistent with prior business arrangements, or whether any transmission may be outside negotiated contractual limits. Consequently, the procedures of electronic commerce, when effectively implemented, offer the opportunity to achieve greater certainty in the contracting process. Section 2 provides a framework for the effective implementation of those procedures for the mutual benefit of both parties. The provisions set forth rules pertaining to the timing of receipt (Section 2.1), the obligation of the receiving party to verify receipt (Section 2.2), the manner in which acceptance occurs within an EDI environment (Section 2.3), and the disposition of unintelligible or garbled transmissions (Section 2.4).

2. Section 2.1 provides that no Document may create any legal obligation until properly received. This Section, therefore, represents a departure from the "mailbox rule" and parallel legal doctrines. Since the technology exists by which the

party originating the transmission of any Document can effectively confirm receipt has occurred, it is inappropriate that the mere dispatch of any Document should be sufficient for any legal purpose.

3. "Properly received" requires that the transmitted Document be accessible at a computer designated by the receiving party. This permits each party to determine the appropriate system location. A Receipt Computer may be the computer of the third party service provider, the computer of either party or a specific terminal within a party's internal network (for example, a billing supervisor's desk). The Receipt Computer should be situated to enable the receiving party to promptly and properly transmit a functional acknowledgement upon proper receipt of any Document, as required by Section 2.2. Such acknowledgement may be sent by the Receipt Computer or by a computer with which the Receipt Computer communicates. Counsel should review the applicable operations to ensure that a functional acknowledgement cannot be transmitted before a Document reaches the Receipt Computer. Counsel should carefully consider the effects under remaining provisions of the Agreement of selecting as the Receipt Computer a computer which is not under the respective control of each party. Note that receipt does not require that any Document actually be examined, only that the Document be accessible. In a paper-based environment, this is similar to when a letter is delivered, but the envelope remains unopened. Each party thereby defers "receipt" until the "right" person or machine has an opportunity to have access to the transmitted data.

4. Note that Section 2.1 operates to relieve both parties from any obligation until the Document has been properly received.

5. Except as described in Comment 2 above, the provisions of Section 2 are not intended to displace other applicable laws relating to contract formation or the underlying commercial relationship of the parties.

6. Several examples which illustrate the operation of the provisions of Section 2 appear at Section 2.4, Comment 6.

Drafting Considerations

1. In identifying the proper Receipt Computer, counsel may wish to consider, by example, current internal practices of the parties for giving notice under existing agreements and identify the person designated for such purposes (see Section 1.1, Comment 2). Since virtually any Document may be sent without direct human involvement, care should be taken that adequate controls have been established regulating the level of approval (and human authorization) required to properly receive any Document.

2. Counsel should consider whether any modification by either party under Section 1.2.1 will require conforming changes in the designation of the Receipt Computer for such party.

2.2. Verification. Upon proper receipt of any Document, the receiving party shall promptly and properly transmit a functional acknowledgement in return, unless otherwise specified in the Appendix. A functional acknowledgement shall constitute conclusive evidence a Document has been properly received.

Comments

1. In light of the capability of technology to facilitate nearly immediate verification of receipt, and also to verify that no defect in receipt has occurred, Section 2.2 imposes an affirmative obligation to provide verification of receipt. Effective verification practices increase the opportunity for the early detection and resolution of transmission errors, thereby reducing the exposure of both parties to possibly significant damages.

2. A "functional acknowledgement" is a transaction set which confirms that receipt of a Document (in the format specified by such functional acknowledgement) has occurred and that all required portions of the Document have been received and are syntactically correct, but otherwise does not confirm the substantive content of the related Document. A functional acknowledgement can verify receipt, but is also designed to identify whether, in fact, omissions or errors in format or syntax have occurred. To the extent a party transmitting a functional acknowledgement identifies any errors or omissions, such notice would satisfy the notice requirements of Section 2.4. See Section 2.4, and the Comments thereto.

3. A party will "properly transmit" a functional acknowledgement or Document if it has been transmitted in a manner which complies with the provisions of Section 1.

4. Whether or not verification is provided will not alter the legal significance of the initial Document; Section 2.1 controls in that respect.

5. Counsel may wish to evaluate whether any circumstances exist where the affirmative obligation to verify receipt should not be imposed and make appropriate exceptions in the Appendix. For example, a party's system may not include functional acknowledgements or the parties may elect to verify in another manner, such as transaction sequence checking.

6. A party initially transmitting a Document may have an obligation to make reasonable inquiries or take other actions to discharge any duty which may exist to mitigate damages arising from a breach of the provisions of Section 2.2 by the receiving party.

7. The conclusive quality of a functional acknowledgement established by this Section assures that subsequent reliance thereon is reasonable.

2.3. Acceptance. If acceptance of a Document is required by the Appendix, any such Document which has been properly received shall not give rise to any obligation unless and until the party initially transmitting such Document has properly received in return an Acceptance Document (as specified in the Appendix).

Comment

1. Section 2.3 unambiguously indicates, with respect to the offer and acceptance of any contract, that no obligation will arise except upon satisfaction of the provisions of the Agreement. See UCC § 2-206(1). The parties, by designating appropriate Acceptance Documents, have the opportunity to define what will constitute acceptance and can assure that no contract arises from any Document until there has been mutual and certain agreement upon the terms contained in such Document.

2. This Section permits the parties to designate Acceptance Documents for Documents not specifically included in the contract formation process.

3. An Acceptance Document might be a computer generated response or a more significant communication, possibly requiring human evaluation at the receiving end. Selection of the appropriate Acceptance Document in a particular context may also be influenced by the manner in which either party interacts with its Provider and by the commercial relationship of the parties. Note that Section 2.3 operates to relieve both parties from any obligation until an Acceptance Document has been properly received in return.

4. Note that the party receiving a Document also controls whether the Acceptance Document is to be sent. If the proposed terms or content of an initial Document is objectionable, neither party has any obligation if the Acceptance Document is not properly received in return.

Drafting Considerations

1. In identifying possible Acceptance Documents, counsel may wish to consider, by example, current internal practices of the parties for giving notice under existing agreements and identify the person designated for such purposes (see Section 1.1, Comment 2). Since virtually any Document may be sent without direct human involvement, care should be taken that adequate controls have been established regulating the level of approval (and human authorization) required to transmit any Document.

2. Counsel is strongly encouraged to review the substantive content of possible Acceptance Documents in selecting the appropriate confirmation of any Document. For example, in response to a purchase order, the Acceptance Document may be:

- a purchase order acknowledgement (which substantively confirms the terms of the purchase order); or

- a shipping notice (specifying that the goods have been or will be shipped; see UCC § 2-206(1)(b)).

3. For certain Documents (for example, a notice of rejection of goods from the buyer), no Acceptance Document will be appropriate. Note, however, if the buyer, having sent such notice does not receive a functional acknowledgement in return, the buyer is on notice that its notice of rejection may not have been received, and should consider either re-sending the notice, or providing such notice by means other than EDI. See UCC § 1-201(26).

4. Counsel may wish to consider applicable industry implementation guidelines in selecting appropriate Acceptance Documents. See Section 1.1, Comments 2 and 13.

5. Counsel should also consider what effects, if any, the selection and use of Acceptance Documents may have upon the additional terms and conditions of the underlying commercial relationship, which may more specifically address contract formation issues (such as the time period in which offers must be accepted or rejected, and the manner of communicating rejection, if at all), rights of rejection and other matters. In addition, notwithstanding the last sentence of Section 3.1, counsel should endeavor to assure that the contract formation practices developed under the Agreement are consistent with any commercial relationship established by any other agreement described in Section 3.1. See Section 3.1, and the Comments thereto.

2.4. Garbled Transmissions. If any transmitted Document is received in an unintelligible or garbled form, the receiving party shall promptly notify the originating party (if identifiable from the received Document) in a reasonable manner. In the absence of such a notice, the originating party's records of the contents of such Document shall control.

Comment

1. Section 2.4 is intended to apply only to unintelligible or garbled messages, incapable of having effective meaning or missing material data components, for which the originating party may be identified within the context of the relevant Document. In those cases, the originating party's records control unless the receiving party gives prompt notification in a reasonable manner. See UCC § 1-204. Such notice may be given by other than electronic means. The obligation to

provide notice under this Section is not burdensome in an electronic environment, and has the advantage of assisting the transmitting party to correct promptly a miscommunication.

2. The phrase "unintelligible or garbled" is not intended to include Documents which are, in human readable form, capable of being read but which contain information which the receiving party knows, or has reason to know, may be incorrect. For example, if ABC has always ordered no more than 200 pencils, its purchase order for 200,000 pencils should not be considered unintelligible or garbled, since pursuant to Section 2.1, the parties can adopt a procedure where XYZ can always review, confirm or reject the substantive terms contained in any Document.

3. Section 2.4 is not intended to displace the applicable principles of the law of mistake. See UCC § 1-103.

4. If, pursuant to Section 2.3, no obligation arises with respect to a Document otherwise subject to this Section because the required Acceptance Document has not been properly received in return, then the fact that such Document is unintelligible or garbled should have no consequences under this Section.

5. Section 4.6 (Exclusion of Damages) clearly applies to liabilities which may arise in connection with any unintelligible or garbled transmission; if the parties wish a different result, appropriate changes may be made.

6. The following examples illustrate the operation of the provisions of Section 2, taken as a whole:

Example 1. XYZ has specified its mainframe computer as its Receipt Computer. ABC sends a Document to XYZ's Provider, but the Document is never made accessible to XYZ's Receipt Computer. ABC's transmission of the Document has no legal effect.

Example 2. XYZ properly receives a purchase order from ABC but never transmits in return either a functional acknowledgement or an Acceptance Document. No contract has been formed but XYZ is liable for any damages suffered by ABC, if any, from XYZ's failure to provide verification as required.

Example 3. XYZ properly receives a purchase order from ABC which by its terms is open for 10 days. XYZ properly transmits an Acceptance Document within the 10 day period, but the Acceptance Document is not "properly received" until the 11th day. No contract is formed.

Example 4. The Appendix requires, as to a purchase order, that a purchase order acknowledgement be sent as an Acceptance Document. ABC, as buyer, sends a purchase order, receipt of which is verified by XYZ, as seller, by sending a functional acknowledgement. However, XYZ never sends an Acceptance Document. No contract for sale has been formed.

Example 5. XYZ properly transmits an Acceptance Document, which is received by XYZ's Provider and stored. Meanwhile, ABC properly transmits a revocation of its offer, which revocation is properly received by XYZ's Receipt Computer before the Acceptance Document is forwarded to ABC's Receipt Computer by XYZ's Provider. No contract is formed; the revocation is effective.

Example 6. The Appendix requires, as to a purchase order, that a purchase order acknowledgement be sent as an Acceptance Document. XYZ, as seller, properly receives a purchase order from ABC, as buyer, but the price data is missing. XYZ sends a functional acknowledgement which identifies the omitted data. Under Section 2.4, XYZ has met its obligations. If XYZ, without the price data, then sends an Acceptance Document, a contract is formed, with the price to be determined pursuant to applicable law. See UCC § 2-305.

Section 3. Transaction Terms.

3.1. Terms and Conditions. This Agreement is to be considered part of any other written agreement referencing it or referenced in the Appendix. In the absence of any other written agreement applicable to any Transaction made pursuant to this Agreement, such Transaction (and any related communication) also shall be subject to [CHOOSE ONE]:

[A] those terms and conditions, including any terms for payment, included in the Appendix.

[B] the terms and conditions included on each party's standard printed applicable forms attached to or identified in the Appendix [as the same may be amended from time to time by either party upon written notice to the other]. The parties acknowledge that the terms and conditions set forth on such forms may be inconsistent, or in conflict, but agree that any conflict or dispute that arises between the parties in connection with any such Transaction will be resolved as if such Transaction had been effected through the use of such forms.

[C] such additional terms and conditions as may be determined in accordance with applicable law.

The terms of this Agreement shall prevail in the event of any conflict with any other terms and conditions applicable to any Transaction.

Comment

1. Section 3 recognizes that the exchange of Documents furthers the commercial relationship of the parties, and that the use of available technology pursuant to its terms should not create any conflict with other written agreements between the parties, or fail to properly accommodate the terms and conditions which define the dimensions of the commercial transactions.

2. Section 3.1 responds to three situations:

- The parties have previously or concurrently executed a separate contract for the sale of goods, which may, by example, be in the form of a master purchase, requirements or outputs agreement. See UCC § 2-306.
- The parties execute such an agreement after the Agreement is signed.
- The parties conduct business in the absence of, or outside the scope of, any such agreements, relying solely upon the Documents and the conduct of the parties pursuant to the Agreement to establish any contract.

In either the first or second case, the other agreement is assumed to be the instrument by which the parties have had the opportunity to negotiate and agree upon terms and conditions applicable to any Transaction which are not defined by the content of any Document. However, in the final case, Section 3.1 requires the parties to elect from among three alternatives the manner for providing the additional terms and conditions not anticipated by the standard formats of applicable transaction sets.

3. Option [A] requires negotiation and agreement upon the additional terms and conditions. Such option, as compared to the remaining options, achieves the highest level of certainty in establishing the terms of any contract of sale. Essential terms and conditions to be negotiated, by way of example, may include warranty, delivery, rejection, liability for non-conforming goods and attorney's fees. The negotiated terms would be included in the Appendix.

4. Option [B] permits incorporation into the electronic environment of existing paper-based methods of conducting business. Option [B] has the objective of clearly defining, for each party, the terms and conditions upon which it wishes to conduct business, and, to the extent amendments may be accommodated, the terms and conditions applicable at any time during the commercial relationship. If selected, however, Option [B], in anticipating, but not resolving, inconsistencies or conflicts in the respective forms of the parties, will not achieve the highest level of certainty as to the terms of any contract of sale.

5. Option [B] requires each party's standard printed forms to be incorporated as a part of the Agreement. The parties may attach

such forms to the Appendix or may identify the appropriate forms which are to be incorporated by reference. Any identification provided should be sufficiently specific to identify only one form. However, selecting the option of attaching such forms to the Appendix assures that the terms and conditions of such forms are explicitly known and disclosed.

6. In response to general industry practice, Option [B] includes, as a further option, language permitting the terms and conditions of any form attached to or identified in the Appendix to be amended by subsequent written notice (which notice must be sufficient to adequately identify the new form or changes). If this option is elected, either party may incorporate into EDI trading the changes in terms and conditions which may occur in its paper-based trading practices. Parties wishing to retain greater control over subsequent amendments would not elect the optional language. In that case, subsequent forms would require mutual agreement for subsequent attachment or identification.

7. In the event of any inconsistency or conflict between the respective forms of the parties, Option [B] incorporates the method of resolution set forth in UCC § 2-207 and other applicable law. Since the attached or identified forms will correspond to Documents which have been transmitted, the terms and conditions contained in such forms should be considered in the same sequence in which the related Documents are transmitted and received between the parties.

8. Option [C], if elected, incorporates into each contract for sale of goods the manner by which applicable law determines additional terms and conditions (other than quantity) which have not been agreed upon by the parties. See, e.g., UCC § 2-305 (Open Price Term), § 2-307 (Delivery and Single Lot), § 2-308 (Place for Delivery) and § 2-309 (Time for Shipment or Delivery). Under the circumstances contemplated by the Agreement, any contract for sale should not fail for indefiniteness. See UCC § 2-204(3).

9. The last sentence of Section 3.1 confirms that the intent of the parties to give effect to the provisions of the Agreement is not contradicted by other terms and conditions applicable to any Transaction, whether set forth in any agreement described in Section 3.1 or by applicable law. For example, a separate contract for the sale of goods may provide for acceptance, in a paper-based environment, to occur upon the receipt of a signed purchase order acknowledgement at the offices of buyer by certified mail. The last sentence of Section 3.1 provides for the acceptance mechanism established pursuant to the Agreement to control with respect to EDI transmissions. Thus, the commercial intent of the parties, taken as a whole, is given effect.

Drafting Considerations

1. If the parties clearly intend that the Agreement is to be used solely and exclusively in connection with other written agreements, and that no other EDI transactions

should be authorized, the second sentence of this Section may be deleted. However, such sentence serves as a "safety basket" for future transactions not otherwise contemplated and should be deleted only after careful analysis.

2. If the parties elect Option [A], counsel is encouraged to carefully consider whether additional terms and conditions should be included to fully implement the commercial intentions of the parties expressed in other provisions of the Agreement. See Section 1.1, Comment 2, and Section 2.3, Drafting Consideration 5.

3. If the parties elect Option [B], counsel may wish to consider specifying the method of providing notice of any amendments to the printed forms adopted by either party, as well as any minimum period before such notices take effect.

3.2. Confidentiality. No information contained in any Document or otherwise exchanged between the parties shall be considered confidential, except to the extent provided in Section 1.5, by written agreement between the parties, or by applicable law.

Comment

1. Section 3.2 focuses on whether the information transmitted in any Document requires confidential treatment by the parties. This Section provides for no confidential treatment except for Signatures (as provided in Section 1.5), and as required by other written agreements (see Section 1.1, Comment 3) or by applicable law. Examples of applicable law would include common law relating to trade secrets, any court order imposing confidentiality obligations as to any relevant information or 47 USC 605.

2. If confidential treatment is to be provided, counsel, in substitution for the provisions of Section 3.2, should prepare appropriate provisions as to the scope and duration of any obligations, as well as appropriate remedies. Counsel may wish to give special emphasis, if only certain information is to be considered as confidential, on the manner in which, in an electronic environment, information is to be designated as confidential by the parties. Information may be designated as confidential on a transaction-by-transaction basis by including an appropriate designation (by the use of special codes) within the related electronic transmissions. Such a technique would satisfy the requirement of this Section 3.2 for "written agreement" if the parties intend for that effect. See Section 1.1, Comment 3.

3.3. Validity; Enforceability.

3.3.1. This Agreement has been executed by the parties to evidence their mutual intent to create binding purchase and sale obligations pursuant to the electronic transmission and receipt of Documents specifying certain of the applicable terms.

3.3.2. Any Document properly transmitted pursuant to this Agreement shall be considered, in connection with any Transaction, any other written agreement described in Section 3.1, or this Agreement, to be a "writing" or "in writing"; and any such Document when containing, or to which there is affixed, a Signature ("Signed Documents") shall be deemed for all purposes (a) to have been "signed" and (b) to constitute an "original" when printed from electronic files or records established and maintained in the normal course of business.

3.3.3. The conduct of the parties pursuant to this Agreement, including the use of Signed Documents properly transmitted pursuant to this Agreement, shall, for all legal purposes, evidence a course of dealing and a course of performance accepted by the parties in furtherance of this Agreement, any Transaction and any other written agreement described in Section 3.1.

3.3.4. The parties agree not to contest the validity or enforceability of Signed Documents under the provisions of any applicable law relating to whether certain agreements are to be in writing or signed by the party to be bound thereby. Signed Documents, if introduced as evidence on paper in any judicial, arbitration, mediation or administrative proceedings, will be admissible as between the parties to the same extent and under the same conditions as other business records originated and maintained in documentary form. Neither party shall contest the admissibility of copies of Signed Documents under either the business records exception to the hearsay rule or the best evidence rule on the basis that the Signed Documents were not originated or maintained in documentary form.

Comment

1. This Section confirms the validity and enforceability of the underlying contracts formed by the electronic transmission and receipt of Documents. See Recitals, Comment 3.

2. The intent of any party to a contract that the contract be legally binding is an essential predicate for the underlying transaction. The Recitals of the Agreement initially stated the parties' intentions that Transactions arising under the Agreement be legally valid and enforceable; Section 3.3.1 implements such intent.

3. Section 3.3.2 establishes any properly transmitted Document as a "writing". This provision expands upon the existing definition contained in UCC § 1-201(46) (defining "writing" to include "printing, typewriting or any other intentional reduction to tangible form."). This modification is of the type contemplated by the Code. See UCC § 1-102(3) and Recitals, Comment 2.

4. Section 3.3.2 (taken with the provisions of Section 1.5) also establishes Signed Documents as sufficient to satisfy the formal requirements of UCC § 2-201 (the Statute of Frauds) when the Documents relate to the formation of any contract for the sale of goods for the price of $500 or more. See UCC § 2-201 and comments thereto. Finally, Section 3.3.2 also establishes that Signed Documents shall be deemed to constitute "original" business records under certain circumstances. See Comment 7 below; see also Section 1.4, Comment 1.

5. Under Section 3.3.3, the conduct of the parties pursuant to the Agreement constitutes a course of dealing and a course of performance upon which they may rely in structuring their business relationship. This conduct includes the identification of the Documents to be transmitted, the establishment of channels of communication and the adoption of mutually acceptable security procedures, all pursuant to the provisions of Section 1. UCC § 2-208 contemplates that such conduct be considered in determining the meaning of this Agreement and any underlying contract for the sale of goods. See UCC §§ 1-205 and 2-208. This conduct, either as a course of dealing or as a course of performance, should be given effect with respect to both the Agreement and other applicable purchase contracts, independent of the status of Signed Documents as signed writings under applicable law. See also UCC §§ 2-202(a) and 2-207(3).

6. Nothing in the Agreement, other than the prohibition on oral waivers contained in Section 4.3, operates to prevent either party from contending that the terms and conditions applicable to any Transaction, or those set forth in the Agreement, may be modified or waived as contemplated by UCC § 2-209.

7. Section 3.3.4 establishes rules of conduct for the parties in connection with the use of Signed Documents as evidence in any proceeding between the parties. By way of example, see Federal Rules of Evidence 802, 803(6) and 1002. However, Section 3.3.4 (together with Section 3.3.2) does not waive the need for a proper foundation to be established for the admissibility of the evidence. In this regard, the effectiveness and reliability of each party's security procedures, record retention policies, confidentiality

obligations and their conduct under the provisions of the Agreement may be relevant in individual cases to the ultimate admissibility of any Signed Documents.

Section 4. Miscellaneous.

4.1. Termination. This Agreement shall remain in effect until terminated by either party with not less than 30 days prior written notice, which notice shall specify the effective date of termination; provided, however, that any termination shall not affect the respective obligations or rights of the parties arising under any Documents or otherwise under this Agreement prior to the effective date of termination.

Comment

1. The provisions of Section 4 include provisions often found in many types of agreements. These provisions are not exclusive, and counsel may wish to consider other similar customary provisions which, for the most part, are not effected by the use of electronic communications. However, as discussed in these Comments, these provisions focus upon some significant legal factors relating to the use of electronic communication under the Agreement.

2. Section 4.1 assures freedom of contract, but also assures the non-terminating party an appropriate opportunity to establish (or re-institute) alternative procedures of communication.

3. A 30-day notice period is considered reasonable by general industry practice. However, see Section 1.2.1, Comment 5.

4. Any notice of termination under Section 4.1 does not affect obligations under the underlying commercial relationship; any notices relating to such obligations would be separately required.

5. With respect to the requirement that notice under this Section be "written", see Section 1.1, Comment 3.

4.2. Severability. Any provision of this Agreement which is determined to be invalid or unenforceable will be ineffective to the extent of such determination without invalidating the remaining provisions of this Agreement or affecting the validity or enforceability of such remaining provisions.

Comment

The Agreement has been prepared for implementation in a variety of situations; Section 4.2 has been included to assure that the entire contract does not fail in the event any specific provision is determined to be unenforceable under any particular circumstances.

4.3. Entire Agreement. This Agreement and the Appendix constitute the complete agreement of the parties relating to the matters specified in this Agreement and supersede all prior representations or agreements, whether oral or written, with respect to such matters. No oral modification or waiver of any of the provisions of this Agreement shall be binding on either party. No obligation to enter into any Transaction is to be implied from the execution or delivery of this Agreement. This Agreement is for the benefit of, and shall be binding upon, the parties and their respective successors and assigns.

Comment

1. Section 4.3 integrates the Appendix with the Agreement into a complete agreement. The provisions of Section 3.1 are effective to integrate the Agreement (with the Appendix) into any other specified purchasing contract.

2. Section 4.3 permits modifications and waivers of the Agreement by Signed Documents (but the parties must include "free-text" Documents to have this result). See Section 1.1, Comments 3 and 4. If the parties wish to require paper-based writing for modifications or waivers, appropriate changes should be made.

3. This Section confirms that the Agreement itself creates no obligations relating to the purchase and sale of goods; such obligations arise only from the Documents and the conduct of the parties.

4.4. Governing Law. This Agreement shall be governed by and interpreted in accordance with the laws of the State of ________.

Comment

In addition to customary factors considered in selecting applicable law, counsel may wish to evaluate various state laws which may be in effect relating to criminal use of computers, computer privacy and similar issues relating to technology.

4.5. Force Majeure. No party shall be liable for any failure to perform its obligations in connection with any Transaction or any Document, where such failure results from any act of God or other cause beyond such party's reasonable control (including, without limitation, any mechanical, electronic or communications failure) which prevents such party from transmitting or receiving any Documents.

Comment

1. The scope of this Section is limited to events which prevent the transmission or receipt of Documents and does not extend to the impact of those events on any other obligations of the parties, whether under the Agreement or in connection with any underlying Transaction.

2. Among other things, this Section is specifically intended to excuse performance resulting from such events as a general power outage in the community or unscheduled "down-time" events outside the reasonable control of one of the parties.

3. Counsel should carefully consider the effect of this Section upon the obligations arising under Section 1.2.3, if such Section is included. To the extent Section 1.2.3 imposes liability, counsel should evaluate whether Section 4.5 reduces or eliminates liability to the extent the actions of a Provider may be considered beyond the reasonable control of either party.

4.6. Limitation of Damages. Neither party shall be liable to the other for any special, incidental, exemplary or consequential damages arising from or as a result of any delay, omission or error in the electronic transmission or receipt of any Documents pursuant to this Agreement, even if either party has been advised of the possibility of such damages.

Comment

Since the benefits of conducting electronic commerce are substantial and far-reaching, an exclusion of damages is appropriate and consistent with general industry practice to encourage recognition of those benefits. However, the scope of this Section is also limited, as provided in Section 4.5, solely to damages arising from or as a result of any delay, omission or error in the transmission or receipt of Documents pursuant to the Agreement. See Section 2.4, Comment 5.

Section 4.6 does not limit any damages resulting from a breach of Section 1.4 (Security Procedures) or Section 1.5 (Confidentiality) and does not apply to damages resulting from a breach of any related Transaction. If different results are desired, appropriate changes should be made.

[4.7. Arbitration. Any controversy or claim arising out of or relating to this Agreement, or the breach thereof, shall be settled in accordance with the Commercial Arbitration Rules of the American Arbitration Association, and judgment on the award rendered by the arbitrator(s) may be entered in any court having jurisdiction thereof.]

Comment

1. Section 4.7 sets forth, as an option, the recommended arbitration clause of the American Arbitration Association.

2. Counsel is encouraged to consider the advisability of arbitration and other forms of alternative dispute resolution in connection with the Agreement and Transactions conducted pursuant to the Agreement. Of course, to the extent arbitration or other similar methods are considered appropriate, the parties may modify or amend the suggested language.

Each party has caused this Agreement to be properly executed on its behalf as of the date first above written.

ABC	XYZ
By____________________	By____________________
Name:__________________	Name:__________________
Title:__________________	Title:__________________

APPENDIX

STANDARDS

Specify ALL applicable standards (and the issuing organizations):

Selected standards include, as applicable, all data dictionaries, segment dictionaries and transmission controls referenced in those standards, but include only the Transaction Sets listed in the DOCUMENTS section of this Appendix below.

DOCUMENTS

					Acceptance Document	
Transaction Set No.	Document Name or Description	Version Release	Verification Required (Yes or No)	Acceptance Required (Yes or No)	Transaction Set No.	Document Name or Description
		Then current and one prior version				

GUIDELINES

Specify ALL applicable published industry guidelines: ____________________

The provisions of the Agreement (including this Appendix) shall control in the event of any conflict with any listed guidelines.

THIRD PARTY SERVICE PROVIDERS

(If the parties will be transmitting Documents directly, insert "NONE")

	Name	Address	Telephone Number
ABC -			
XYZ -			

RECEIPT COMPUTER

ABC -

XYZ -

ALLOCATION OF PROVIDER COSTS

(If no special allocation has been agreed upon, enter "NONE"): ____________________________________

SECURITY PROCEDURES

(If no security procedures have been agreed upon, enter "NONE"): ____________________________________

EXISTING AGREEMENTS

(If the Agreement is not to be considered a part of any existing written agreement, enter "NONE"): ____________________

[TERMS AND CONDITIONS

If the parties select Section 3.1[A], specify terms and conditions: ____________________________________

If the parties select Section 3.1[B], attach applicable forms or provide sufficient identification of each form being incorporated: ____________]

Department of Defense Response to Mr. Torres' Questions

The SPEDE program is conducted by the Defense Logistics Agency. They have applied EDI technology to their Standard Automated Material Management System to permit their supply centers to issue orders under a Blanket Purchase Agreement and receive vendor responses electronically. In this particular program, the vendors who participate have installed Government-furnished SPEDE software. While DOD will continue to promote incentives for small businesses, our goal through the use of EDI standards is for small businesses to use commercially available software.

1990 EDI PAYMENTS
PROGRESS REPORT

NACHA
America's Largest
Electronic Payments
Network

Prepared by:
The Staff of the National Automated Clearing House Association
April 29, 1990

1990 EDI Payments Progress Report

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National Automated Clearing House Association
1990 EDI Payments Progress Report

I. Executive Summary

In 1989, the NACHA staff prepared an EDI Position Paper that laid out issues and made recommendations regarding the present and future direction of EDI in the banking industry. The paper concluded that:

(1) Payment practices of corporations will change as a result of EDI developments;

(2) The banking industry will continue to play a major role in processing payments and information;

(3) The ACH network is the most cost effective, universally accepted and reliable payment network for moving EDI payments and remittance data;

(4) Corporations prefer to move EDI payments and information together instead of separately.

The paper also listed some challenges to the banking industry and to NACHA in enhancing the ACH network's ability to handle EDI. The purpose of this 1990 EDI Payments Progress Report is to describe the progress that the banking industry has made in supporting EDI during the last year. A number of issues are discussed including the expanding role of banks in marketing and developing new EDI services, the growth of EDI payments in the private and public sectors, and resolution and status of several current EDI payment implementation problems.

The 1990 EDI Payments Progress Report concludes that EDI is starting to expand and that financial EDI, particularly the movement of EDI payments and remittance data, is fast becoming an integral part of EDI implementation plans within corporations. Many companies have committed to sending EDI payments due to the significant cost savings and reliabilitiy asssociated with electronic payment and remittance processing. Government initiatives, both Federal and state, have also contributed to pulling companies into the EDI payment arena.

Financial institutions are beginning to work with companies in designing EDI systems and are developing a wide array of services. Industry groups like the Bankers' EDI Council are fulfilling an important role in helping to define the capabilities financial institutions should consider developing in order to meet their customer needs. The Council is playing other critical roles by addressing specific payment applications and resolving EDI implementation problems.

The issue of whether companies should keep the "dollars with the data" is being decided by companies themselves. Surveys indicate that most corporations prefer to keep payments with remittance information. More importantly, as a result of the Uniform Commercial Code (UCC) Article 4A, some liability may be assumed by companies that separate the two. Corporations may have more protection under the Article 4A if the payment and information are kept together.

Many new EDI payment applications are being or already have been developed including state tax payments, commercial loan payments, child support payments from the employer to the state, electronic dealer drafting payments, and international EDI payments. The standardization of these payment applications is an important step in fostering EDI payment growth.

Finally, education in the form of database development, continued training of financial institution personnel and new EDI payment implementation guidelines are essential to ensure the successful evolution of EDI in the ACH network.

II. EDI Market Growth

A. General EDI Market

The general EDI market generated significant revenues in 1989. An estimate by EDI Resources Inc. placed total EDI revenues at $345.9 million of which $157.5 million were derived from software, $136 million from hardware, $43.1 million from transactions, and $9.3 million from consulting services (see Exhibit A). This included revenues from non-financial EDI applications, such as purchase orders and invoices, and from financial EDI sources such as, the movement of payments and remittance data.

EDI, already close to a $350 million per year industry, is expected to have even greater growth during the 1990s. A study by International Resource Development (IRD) Inc. predicted that EDI's current revenue growth rate of approximately 35% per year is likely to accelerate to 50% for both services and software by the mid-1990's. The reasons for this growth can be attributed to several developments in EDI. The EDI market is approaching the point of "critical takeoff" because the following factors are combining to cause EDI to be profitable: (1) the development of standards; (2) demand by major corporations and government entities prompting participation by suppliers and customers; and (3) activities by major vendors. The IRD report estimated that over 20,000 companies in 50 different industries have already implemented various EDI applications.

B. Banking Industry EDI Market

EDI presents the banking industry with opportunities to provide new value-added payment and remittance processing services to corporations and to differentiate cash management services from other financial institutions. Research indicates that bankers are anticipating widespread acceptance of EDI within the banking industry. A 1989 survey conducted by Trans Data Corp, asked bankers to rate the likelihood that seven banking technologies would be widespread by 1994. Eighty seven percent of the respondents, representing 381 banks with $75 million or more in deposits, rated EDI as being the technology most likely to be widely used in five years (American Banker Technology Survey, p.44).

There are over 10 billion corporate-to-corporate payments made annually, mostly by check. NACHA conducted a survey of several major wholesale lockbox banks and discovered that over 80% of the checks processed for corporate customers with wholesale lockboxes had more than one invoice per check. On average, there were approximately eight invoices paid per check. The corporate requirements for reporting this information is limited usually to the invoice number and invoice amount. Therefore, one can assume that the market for the banking industry in the transition from checks to EDI payments is the potential conversion of 10 billion corporate-to-corporate payments and a substantially larger number of addenda records. The movement of electronic corporate-to-corporate payments with addenda records over the ACH network is commonly referred to as EDI payments. EDI Research, Inc. estimates that EDI payments will continue to grow at a 70% rate in 1990.

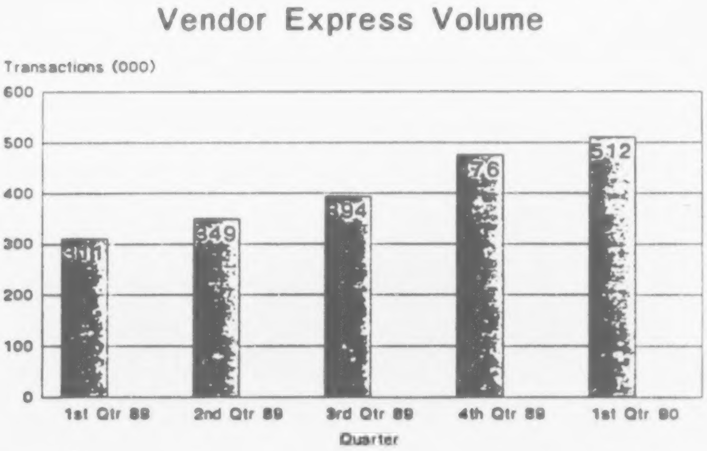
Unfortunately, determining exactly how widely accepted EDI payments currently are is difficult since statistics regarding the number of EDI payment transactions across the entire ACH network are not available. NACHA is working with the Federal Reserve and private sector ACH processors to design and develop statistical reports regarding the number of ACH standard entry class (SEC) codes, addenda information and dollar volumes processed through the network. These reports should be available later this year.

In an effort to ascertain a general idea of the growth of EDI payments in the banking industry, NACHA conducted a survey of member banks belonging to the Bankers' EDI Council. Responses varied from little or no growth in EDI payment volume to substantial growth in several categories. Most of the respondents had at least a few customers using EDI services with one bank reporting 600 customers.

Some respondents to the survey noticed a trend among many companies that have already made the commitment to non-financial EDI and are now turning their focus to financial EDI. For instance, the next logical step for a company receiving electronic invoices is to originate electronic payments and remittance data. Some of the major companies committed to sending EDI payments include General Motors, Exxon, Sears, Phillips Petroleum, Pillsbury, Chevron, Dupont, 3M, General Electric, and many others. The oil industry has endorsed the use of CTX transactions which envelope X12 820 messages and send payment and remittance data over the ACH network. Companies see many benefits to the migration from checks to EDI payments. In addition to a reduction in operating costs, companies report a 97% accuracy rating in applying payments to their accounts receivable systems versus 70% for checks.

Vendor Express

Specific EDI payment volume data is available from the public sector. The Financial Management Service of the U.S. Treasury has reported significant growth in their Vendor Express program. The Vendor Express program, initiated in 1987, utilizes the ACH network to send government vendor payments and remittance data. The following graph illustrates recent growth in Vendor Express volume on a quarterly basis:



There are currently 20 government agencies participating in the Vendor Express program with several thousand financial institutions of all sizes receiving these transactions. The most commonly used format is the CCD+. The CCD+ is used because the majority of agency payments are for a single invoice. The Department of Defense's (DOD) Defense Contracts Administrative Services Regions (DCASRs) are beginning to utilize the CTX format which allows the vendor to be paid for a large number of invoices. The DCASR CTX program is currently handling 10,000 payments per month which amount to $200,000,000. The program is expected to handle 50,000 - 70,000 payments per month when it is fully operational. There presently are 100-150 vendors that participate in the DCASR program.

The success of the Vendor Express program is stimulating corporate EDI payment activities as well as providing a catalyst to other government programs. The legislation and regulation at Federal, state and local levels is part of government efforts to reduce costs and to make government disbursements and collections more efficient.

State Tax Payments

Many states have passed or are in the process of introducing legislation that requires corporate tax payers to pay electronically certain state taxes above set dollar amounts. It is estimated that by January 1991, approximately 30 states will have EFT tax programs in place (see Exhibit B). An increase in the number of electronic tax payments and electronic filing programs by states will prompt corporations to use more EFT and EDI applications in day-to-day operations, just as the federal government's adoption of the ACH for Social Security direct deposit facilitated the private sector's adoption of the ACH for direct deposit of payroll.

There are presently 14 states with EFT tax programs in place (see Exhibit C). The information available from 7 of the 14 states that have an EFT program in place indicates that approximately 250,000 electronic tax payment transactions totalling nearly $23 billion will be made per year via EFT (in those seven states alone).

Child Support Payments

Beginning on November 1, 1990, a nationwide program will begin for mandatory withholding from an absent parent's wages or income for IV-D child support cases (IV-D is a program that requires states to locate an absent parent whose children receive child support payments). In addition to the measures that take effect in November 1990, beginning January 1, 1994, states will be required to implement wage withholding for all child support orders issued. It is estimated that the potential volume of payments between employers and the state could be as high as 9,000,000 per month, with an estimated collection potential of $30 billion.

Summary

Due to the combination of private and public sector initiatives, the EDI payment and remittance processing market continued to expand in 1989 and significant growth is anticipated in 1990. Many companies have committed to send EDI payments due to the significant cost savings to be realized and the reliability associated with electronic payment and remittance processing.

III. EDI Payment Issues

A. Banking Industry Commitment

One of the issues raised in the 1989 EDI Position Paper was whether the banking industry was committed to supporting EDI payment applications. The paper concluded that the banking industry was committed, and in 1989-1990, that commitment has been reaffirmed through the activities of the Bankers' EDI Council, the Federal Reserve's EDI policy statement and new EDI product offerings by many banks.

1. Bankers EDI Council

In April, 1989, NACHA established the Bankers' EDI Council to give the banking industry an opportunity to take a leadership role in the evolution of EDI. Presently, the Bankers' EDI Council has 55 depository financial institution members, two non-voting national trade association members, and nine associate members (see Exhibit D). Two of the financial institution members are Canadian banks.

The Council's mission is: "to assist the banking industry in meeting the EDI needs of their corporate customers."

To carry out this mission, the following objectives were adopted:

- To promote the role of the banking industry in EDI;
- To provide the banking industry with a strong unified voice in EDI developments;
- To create the necessary educational tools for financial institutions to support corporate EDI requirements;
- To develop banking industry conventions and implementation guidelines of EDI standards;
- To identify opportunities that will influence the development of the ACH network in a way that will continue to support the EDI needs of corporate users;
- To interact with other EDI stakeholders to ensure that EDI evolves in an efficient manner.

Prior to the creation of the Bankers' EDI Council, there was no process for handling EDI payment applications that were not addressed in the ACH rules or by ANSI ASC X12 standards. Banking conventions developed and approved by the Council provide a standard format for remittance data associated with an EDI payment. In other words, a banking convention is an "EDI guideline" for formating data in ACH addenda records, most commonly the CCD+.

The Bankers' EDI Council is becoming an official, voting member of ANSI Accredited Standards Committee (ASC) X12, with the chairperson representing the Council at these meetings. Other Council members will serve as representatives to various ASC X12 standing committees. Furthermore, other industry groups are represented on The Bankers' EDI Council. The National Corporate Cash Management Association and the American Bankers Association are nonvoting members of the Council, and the Financial Management Service of the Treasury and the Federal Reserve are kept informed of Council issues and invited to appropriate meetings.

Keeping the NACHA family apprised of Bankers' EDI Council activities is another important priority. Currently, the ACH Executives are represented at each meeting by an Executive Director from one of the local ACH associations. All activities of the Banking Conventions Committee are reported to the Chairperson and Subcommittee Chairpersons of the Rules & Operations Committee. Minutes from the Bankers' Council Education & Training Committee are sent to the chairperson of NACHA's Education & Training Committee.

The Bankers' EDI Council has addressed a series of issues over the past year and has begun to address a number of others which are detailed later in this paper.

2. Federal Reserve Policy Statement

Concurrent with these developments, the Federal Reserve released a policy statement on EDI in September 1989 (see Exhibit E). The statement announced that the Federal Reserve would continue to support current transactions that move payment and information over the ACH network. This includes CTX, CTP and CCD+ formats. In addition, the Federal Reserve left open the possibility of supporting new EDI transactions that are payment-related, providing there is a good business case for this practice.

This policy statement is important since at some point in the future, there may be a compelling business need to add other types of EDI transactions to the ACH network. For instance, new applications such as acknowledgements or electronic invoicing, which are payment-related, could be sent over the ACH network.

3. Bank EDI Services

Financial institutions are becoming more sophisticated in the EDI services they offer to corporate customers. Many banks have evaluated their EFT/EDI strategies as evidenced by developments over the past year. Basically, three roles have emerged for banks in EDI. These include serving as an entry point into the payment system for value-added networks (VANs); providing correspondent EDI services to other banks; and developing proprietary EDI services to offer to corporations.

While it is evident that most banks are looking strategically at EDI developments, conclusions vary on the exact capabilities banks have developed. Pension and Investment Age published a directory of cash management banks and their capabilities to originate and receive CCD, CTP, and CTX. The conclusions from this publication are very positive. Of the 127 banks surveyed, the vast majority could originate and receive most of the different corporate ACH formats (see exhibit F).

While this offers a very positive picture of individual bank capabilities, studies conducted by two leading consulting firms reach more conservative conclusions. An Ernst & Young survey concluded that ". . . while most banks are considering their EDI strategies, a limited number have the capabilities to be full-service EDI providers." (P&I Investment Age 1990, p.4) This survey found that EDI services are offered by 44% of all banks and 80% of the top 20 banks. This survey also found that many of the respondents are only processing CCD transactions.

A Coopers & Lybrand survey of the 20 "top 125" cash management banks found that most of these banks have developed EFT\EDI services, defined as the ability to transfer payment and remittance detail. Most of these banks have developed their own internal transaction processing software. On the receiving side, top cash management banks tend to send the payment and remittance advice through their electronic information reporting services, where they accept and merge a variety of payment formats for receiving customers.

a. VAN/Bank Alliances

Recently, several financial institutions have entered into alliances with value-added networks to provide EDI services to their corporate customers.

Exhibit G is a chart detailing four VAN/Bank alliances. These are:

- Sears Communication Company and eight banks (Bank of America, CoreStates, Continental, National Bank of Detroit, Harris, The Northern Trust, First Wachovia, and Mellon.)
- General Electric Information Services (GEIS) and two banks; First Interstate Bank and Seattle-First National Bank
- Harbinger and three banks; Citizens and Southern, Marine Midland, and First Bank Systems
- IBM and First Chicago

Sears and its eight affiliated banks are offering their services in two stages. First, Sears is offering the service to their own suppliers through the Sears Merchandise Group. Then the program will be offered to the business community at-large. Presently, each of the eight banks involved is in the planning stage of piloting a customer.

In discussions with several banks involved in VAN/bank alliances, staff found that the general practice is to permit each corporate customer to choose whether it prefers payment and remittance data to be sent together via the ACH network, or for the payment and remittance information to be split, with former sent via the ACH network and the latter sent through the VAN.

Although there has been no short-term return to the banks involved in these VAN/bank alliances, each bank has entered its respective arrangement with more strategic objectives in mind. In the long term, VAN/bank alliances could improve a bank's EDI market position, provide an opportunity for the bank to learn more about EDI, and hopefully, increase its EDI payment and remittance transaction revenue. In conclusion, banks have entered into alliances with VANs as a long term strategic decision, and although immediate benefits are difficult to quantify, the potential benefits to VANs and banks could become significant.

b. Correspondent Bank Services

Banks that do not have the resources to develop sophisticated in-house EDI capabilities can choose to utilize the services of a correspondent bank. Correspondent banks can provide educational as well as origination and receiving payment services for other banks.

On the receiving side, a correspondent bank can provide payment and detail information via a microcomputer or a data transmission. This bank might offer its customer bank a variety of reporting options including credit, summary, and detail reports. If needed, the correspondent bank might provide the customer bank with a postable file with which to make credit to customer accounts. The remittance detail could be sent to the customer bank in a variety of file formats: X12, ACH, or BAI, dependening upon the bank's needs.

Several banks have entered the correspondent EDI market in the past year and have begun to realize EDI payment transaction volume as a result. This is a service that provides low cost entry to smaller financial institutions. More importantly, correspondent bank EDI services serve as a defensive measure for institutions that might otherwise lose corporate customer business if they could not afford to offer their own proprietary EDI services.

c. Proprietary EDI Bank Services

Banks that have the resources can strive to provide their own EDI services to their corporate customers. Developmental costs can be high for a bank just entering the EDI arena. In a Coopers & Lybrand survey of major cash management banks, the respondents stated that expenditures for software and external services ranged from $250,000 to $500,000. In NACHA's survey of Bankers' EDI Council members, costs ranged from an initial investment of $20,000 to $150,000 ($51,000 average).

The fundamental payment/remittance processing services that an individual bank can provide include the following:

- o Origination Capability: Originating over the ACH network various formats including CCD+, CTP, and CTX. The bank may be required to translate from proprietary or ANSI ASC X12 formats into these NACHA formats.
- o Receiving Capability: Receiving from the ACH network various formats including CCD+, CTP, and CTX; and passing on remittance data to their corporate customers in a way that best meets the customers' needs. This can include paper advices; transmissions; terminal or PC access; merging ACH remittance data into lockbox transmissions; or reformatting into proprietary, BAI or ASC X12 formats.

B. Dollars with Data Controversy

The 1989 EDI Position Paper concluded that corporations generally prefer to keep EDI payments and remittance data together. Surveys mentioned later in this section continue to support that position. However, in light of the Uniform Commercial Code (UCC), Article 4A, there may be another reason to keep the two together. Companies may actually be taking on more liability by separating EDI payments from the remittance data.

Under UCC Article 4A, when a company originates a payment and remittance advice to its bank, the bank assumes several liabilities for executing the payment order, which arguably - includes accompanying information. For instance, the sending bank (ODFI) is liable for the timely execution of the payment order once it has accepted the payment order from the originating company. If the remittance is sent to a VAN, the same protections are not afforded to the company, unless the parties otherwise have agreed to such protections.

Also, in cases involving an interloper, Article 4A allocates liability between the bank and corporation. In certain instances, the bank may be responsible for some or all of the liability. Under the same conditions involving an interloper, if information is separated from the payment and is sent through a VAN, the allocation rules defined in Article 4A would not apply to the information and the company may be solely responsible, unless the agreements of the parties provide otherwise.

Article 4A has already been passed in several states and likely will be introduced in virtually all the remaining state legislatures in the next few years. It is anticipated that NACHA will adopt a choice of law provision in its ACH Rules before 1991, in which case all ACH transactions subject to Article 4A will be governed by the laws of a state that has adopted Article 4A. Since the protections and liabilities afforded to companies under UCC Article 4A vary based on whether the remittance is included with the payment, companies need to understand the risks they may incur.

Several recent surveys conclude that corporations would prefer to receive their payment with the remittance data. For instance, in 1989, EDI Group Ltd., Oak Park, Ill. surveyed 97 corporate treasurers and 75% said they wanted banks to handle both payment and payment detail. In a Greenwich Associates Report, over 66% of the executives surveyed stated that payment processing and payment detail are the role the bank should pursue in EDI. A PNC study was published in the January/February issue of the Journal of Cash Management where of 42 corporations surveyed, more than 55% preferred banks handle both payment and payment detail. A Mellon Bank survey of corporations with $250 million or more in annual sales found that of the 290 respondents, 158 companies (54%) preferred the payment with the remittance; 83 companies (29%) preferred to separate the two; and the remainder had no preference.

C. Zero Dollar EDI Payments

The Bankers' EDI Council has begun to investigate the possibility of sending zero dollar EDI payments over the ACH network. Originally, the request came from a banker who had had several corporate customers inform him of a need to send zero dollar transactions. These would replace zero dollar checks produced by the companies' accounts payable systems. In many respects, the business need for this transaction is analagous to a credit advice.

Another issue related to sending remittance information via the ACH network is the perceived value to sending the receiving remittance information before the payment. For instance, within the Sears value-added network, remittance information can be forwarded up to seven days before the payment. Similar capabilities are offered by the other VANs. The Bankers' EDI Council is studying whether there is a business need for sending preremittance advices over the ACH network. If a business case is found, there are ways that the ACH network could accommodate such a payment. One short-term solution may be to send a prenote. One long-term solution could be to develop a new zero dollar transaction. However, there needs to be evidence that such capability is actually in demand before a recommendation is submitted to the NACHA Rules & Operations Committee.

D. Proof of Payment

A work group of the Council has begun to examine the proof of payment issue, particularly in regard to state tax payments. Corporations would like to have a way to prove to the state that they paid their taxes via the ACH. A definition for proof of payment is being drafted by NACHA legal staff, which would propose to the states that proof of payment be defined as when the account is debited at the Originating Depository Financial Institution (ODFI). The work group is also looking into the feasibility of providing an acknowledgment over the ACH network, and whether or not there is a sufficient business need to do so. If so, the business case will be submitted to the Rules & Operations Committee for further action.

E. New Payment Applications

1. State Tax Payments

Government initiatives are important because they often are mandatory, and thus compel businesses to become familiar with EDI payments and the benefits associated with EDI. Electronic tax payments provide several benefits to the participants of such programs. For the collecting state government, EFT payments are a more efficient method for receiving payment; allow automatic updating of tax payments, therefore requiring less manual intervention; and reduce past due collections of corporate taxes, and thus increase the state's cash position.

There are also several benefits that corporations realize from electronic tax payments. Electronic payments are more reliable in terms of time and certainty that payment will arrive at its destination by the due date. ACH payments are less costly than check disbursements, and require minimal account reconciliation. Corporate taxpayers will ultimately benefit from the cost savings that states realize.

The data requirements for state tax payments vary widely from state to state. Some states require that all taxes above a set dollar amount must be paid by EFT. Other states require that specific types of taxes be paid electronically based upon the corporate tax payers prior liability (see Exhibit C). In an effort to accommodate the various business practices of corporate tax payers, some of the states have offered several payment methods. The most common payment options offered are ACH debit, ACH credit and Fedwire.

ACH Debit

The ACH debit option is typically used as follows: the corporate tax payer initiates a telephone call to the state or the states processing agent, provides specific tax information to the state or agent, and the state subsequently originates a CCD debit through the ACH to the corporation's account. The most important feature of the ACH debit options is that in most states the taxpayer controls the initiation of the ACH debit, not the state. Thus, it has gained surprisingly wide acceptance (see chart below), especially among small and medium-sized corporations.

ACH Credit

Many large corporations object to or do not permit third parties to debit their DDA accounts. Therefore, the ACH credit option provides the greater control that some companies require. The ACH credit payment option allows the corporation to originate an ACH credit (CCD+ or CTX) to the state's account. The CCD+ and CTX applications allow remittance information to accompany the tax payment. The remittance information is carried in the addenda records of the CCD+ and CTX. The CTX application utilizes the ANSI X12 820 transaction set to carry remittance information. A CTX application may carry up to 4990 addenda records (eighty characters per record). The CCD+ application carries one, eighty character, addendum record. The information contained in the addendum record is relayed using ANSI ASC X12.4 data segments or NACHA endorsed banking conventions. The Bankers' EDI Council has approved the Tax Payment (TXP) banking convention for use in the CCD+ addendum (see next page).

Fedwire

This method is usually used for very large dollar amounts and as a back-up if the taxpayer is not able to send the payment until the day the payment is due.

A survey of the states that offer at least two payment options revealed that the majority of taxpayers choose the debit option. The details of the survey are noted below.

State	ACH Dr	ACH Cr	Fed-wire	Other *
Florida	80%	20%	-	-
Idaho	6%	-	24%	70%
Indiana	75%	5%	18%	2%
New Mexico	-	75%	25%	-
New York	40%	28%	22%	10%
Tennessee	60%	15%	15%	10%
Texas	52%	26%	22%	-

* Other includes certified checks, interbank transfers and bank deposits.

Discussions with officials representing the states indicate that they favor the ACH options due to the high error rate associated with Fedwire remittance information (70-80%). Although the error rate associated with ACH credits also is fairly high (40-50%), most of the state officials feel that the error rate will decrease significantly once the TXP standard is adopted. ACH debits, on the other hand, are virtually error-free.

TXP Convention

The addendum information for the CCD+ is relayed in ANSI ASC X12.4 data segments or NACHA endorsed banking conventions. However, two of the states that initially passed EFT programs developed their own information requirements and formats for relaying this data. Because of the limited space within the addendum record (80 characters) and because each state addressed their information requirements from different perspectives, it soon became apparent to the corporate users of the ACH credit option and their financial institutions that they could be dealing with multiple, and sometimes incorrect formats for the remittance data as additional states begin their own programs. Thus, a corporate tax payer could have potentially been facing 50 different formats for the state tax payment application.

The Federation of Tax Administrators (FTA), with the cooperation of the states, and the Committee on State Taxation (COST), which represents over 300 corporations, initially developed a standard addendum format for the states to use. In response to FTA's request to obtain the banking industry's endorsement of their efforts, the Bankers' EDI Council formed a work group to analyze the states' requirements and design a format that would meet their needs. The work group consisted of FTA representatives, COST representatives, and Council members. The result was the Tax Payment (TXP) convention which was approved by the Bankers' EDI Council on March 7, 1990.

At present, the TXP format is accepted by the following states: Colorado, Florida, Iowa, New York, Oklahoma, and Tennessee. Indiana and New Mexico will convert to the TXP format in the future (most likely this year). At this time, Texas has indicated it will be using the TXP format for most of its taxes and a slight variation of TXP for one of its state taxes. Alaska, Idaho, Louisiana and Montana currently do not offer the ACH credit option. However, Alaska, Louisiana and Idaho are considering offering the ACH credit option in the future.

Both the Vermont and South Dakota legislatures recently passed electronic tax payment enabling legislation. At this time, Vermont is not preparing a electronic tax payment program. South Dakota currently is developing a state tax EFT program. The program will be voluntary and will offer both the ACH debit and ACH credit payment options (program will begin in August of 1990). The ACH credit option will carry the TXP format.

The U. S. Department of the Treasury Cash Management Division, in cooperation with the Internal Revenue Service Center in Andover, MA, is conducting a test for the Automated Deposit for Electronic Payment of Taxes (ADEPT), where taxpayers, through a financial institution, can pay their Federal tax deposits electronically. The test will run from April, 1990 through June, 1991. The program will use the CCD+ format for ACH credits. For the test, the addendum record is carrying information via the NTE segment. However, indications are that the TXP format will be utilized in the future.

Federal, state and local governments will continue to develop new EDI payments applications as a result of increasing concerns with costs and efficient processing of payment collections. Also, governments' increased use will compel corporations of all sizes to become more receptive to EDI and EFT.

2. Child Support Payments

Nationally, beginning on November 1, 1990, withholding for IV-D child support cases from an absent parent's wages or income will generally begin immediately with the issuance of a new or modified order for child support whether or not there is an arrearage owed. IV-D is a regulatory designation under the Social Security Act that requires states to locate and enforce legal orders for absent parents whose children receive child support payments. An employee may not be terminated because of the child support withholding requirement and employers could be fined. Many companies are unaware of this legislation.

The child support legislation was passed and is being implemented in an effort to ensure that children are supported by their parents and to reduce the costs of welfare to taxpayers. Wage withholding is the most effective method for enforcing child support obligations. Wage withholding taps the parent's income at its source and becomes a regularly deducted item, such as income taxes and Social Security deductions.

In addition to the measures that take effect in November 1990, beginning January 1, 1994, states will be required to implement wage withholding for all child support orders issued. Wage withholding will be required, regardless of whether the order is under the jurisdiction of the state Child Support Enforcement Agency (IV-D program). Thus, in 1994 all new or modified cases, both IV-D and non-IV-D, will be subject to the withholding requirements. Each state must pass enabling legislation. A state's enabling legislation could be more stringent than the federal program. A number of states already have mandatory withholding.

The program will work as follows: the state will notify employers when withholding must begin; the employer deposits the withholding for child support on a periodic basis; once the state receives the child support payment from the employer it must meet distribution times for payment to the custodial parent. By using the ACH to make the payments involved in this program, the recipients of the payments will receive the funds more quickly than if the payments were made with a check. The payments from the state to the custodial parent can be made via the ACH using the PPD format. However, the format for remittance information that an employer must send to the state with the wage deductions needs to be developed.

Maryland, Iowa, Nebraska, Oregon, and the New England area are working on various pilots. The states are very interested in standardizing the EFT procedures. Currently, Iowa pays some custodial parents via the ACH.

3. Commercial Loan Payments

The data requirements for a draft of a banking convention that could be used to facilitate the repayment of commercial loans via the ACH have been submitted to the Bankers' EDI Council for review. The Council has established a work group to investigate this concept further. The work group will explore the possibility of utilizing existing data elements within the X12 structure to meet these requirements.

4. Electronic Dealer Drafting

A work group is in the process of finalizing a draft for a convention, which provides a standard format for automotive dealers' floor plan banks to pay their manufacturers via the ACH Network. A floor plan is a loan a bank makes to an automobile dealer to finance automobiles the dealer purchases from the manufacturer. The advantages of the ACH network (cost, reliability, and availability) make it much more attractive than other payment alternatives that the participants have to choose from. Benefits to the manufacturer include reduced bank charges for processing checks and sight drafts and benefits to the dealer include better cash forecasting to manage cash needs of the dealerships.

Once finalized, the Electronic Dealer Drafting convention will become the standard by which manufacturers originate these types of payments.

F. All-Electronic ACH Network

In June 1989, the NACHA Board of Directors issued a resolution requesting that the Federal Reserve implement an all-electronic ACH by July 1991. Although the Federal Reserve has not committed to accomplishing this goal by a specific date, it is introducing software and a PC package to support this purpose and is developing a marketing campaign aimed at financial institutions. The software includes a bulk data system for large institutions, Fedline II for medium institutions, and more recently, the Federal Reserve has introduced receiver only software for small financial institutions. Furthermore, the private processors, Visa, Arizona and NYACH are all-electronic. NYACH became all-electronic as of January 1990.

F. Education

There are a variety of activities occurring within the industry that are assisting financial institutions and their corporate customers with EDI payment implementations. These include:

1. Developing EDI capable guidelines

The Bankers' EDI Council has formed a work group to assist financial institutions and corporations in defining various EDI bank capabilities. For financial institutions, this work group is finalizing an educational paper, which explains the originating and receiving options for a financial institution interested in providing EDI products for their corporate customers. For corporations, this group is developing a questionnaire that would provide information for corporations in assessing the EDI capabilities of financial institutions.

2. Offering seminars and training sessions

At a recent Bankers' EDI Council meeting, an afternoon of educational sessions was held on the basics of EDI and state tax payment implementation strategies. The state tax payment implementation session examined strategies of originating and receiving banks, as well as the corporate perspective on implementing state tax payments. Furthermore, at this meeting, a session was held which focused on several strategic approaches a bank could take when investigating how to provide EDI services to their corporate customers. This session looked at the options of bank\VAN alliances, a bank providing correspondent services for another bank, and what a bank can offer on its own. The Education Committee is examining the possibility of expanding the audience for this type of training.

3. Evaluating the Need for an EDI Database

The Bankers' EDI Council has charged the EDI Capable Work Group with defining an EDI database for financial institutions. This group is beginning to formulate a structure for this database. It will be a database to aid financial institutions thus allowing an originating bank to find an appropriate receiving bank. This work group is also developing a questionnaire for corporations to use when evaluating an EDI bank. The first step of this group's efforts was to write a comprehensive outline for an "EDI Payments Capable Guideline." The group is in the process of drafting a document from this outline, which covers the capabilities a bank needs to investigate when beginning to originate and receive EDI payments.

4. Preparing EDI payment implementation guidelines and banking "conventions"

The Bankers' EDI Council is working on a Conventions and Implementation Guidelines notebook that will be available later this year. This notebook will cover the status of EDI, the relevant payment formats, and the Bankers' EDI Council conventions. As new conventions are passed by the Council, updates will be made to this notebook. Furthermore, the Bankers' EDI Council is working with the American Bankers Association on developing an EDI primer targeted at smaller financial institutions.

5. Assist financial institutions in marketing EDI payments

The Bankers' EDI Council's Corporate Trading Partner Agreement Work Group is investigating the need for a standard EDI payment-related corporate trading partner agreement, and the most appropriate place for such an agreement. Possibilities include inclusion in the NACHA Rules, serving as a template, or drafting an addendum to another EDI agreement which presently does not cover payments.

G. International EDI Payments

The rise in international payments has created a need for standard international payment messages similar to the U.S.'s 820. The United Nations is sponsoring standards for international EDI called EDIFACT (Electronic Data Interchange for Administration, Commerce and Transportation). EDIFACT payment messages are currently being developed by a UN working group. The work group is comprised of both Western European and North American EDIFACT Board representatives. The group is working on six payment messages that are still being refined and are not yet available for trial use. The six messages are as follows:

Credit Advice	CREADV
Extended Credit Advice	CREEXT
Debit Advice	DEBADV
Extended Payment Order	PAYEXT
Payment Order	PAYORD
Remittance Advice	REMADV

The work group hopes to finish its work on the messages shortly. The messages then must be reviewed by both the North American and Western European EDIFACT boards. Finally, the UN must review and approve the messages for trial use (status 1). The work group hopes to have the messages ready for the UN's approval by September, 1990.

The international EDI payment messages are in the early stages of development. At present there are not any payment messages available for trial use. In addition, many U.S. companies are in the early stages of implementing ANSI ASC X12 standards and are often unaware of or unconcerned with EDIFACT standards. Therefore, adoption of the EDIFACT standards by U.S. corporations in the near future is doubtful. It is likely that both ANSI ASC X12 and UN/EDIFACT standards will coexist until at least the mid 1990's. U.S. companies that deal with international trading partners, which utilize EDIFACT standards, will either rely on translation services or support multiple standards.

There are a variety of ways international EDI payments can take place. One method is for correspondent banks to exchange the data and settle the payments through due to/due from accounts. The S.W.I.F.T. network is gearing up to handle the EDIFACT payment messages and could be used to exchange EDI remittance data between correspondents. Another method is to exchange EDI payments over existing proprietary bank systems. The following are two examples of proprietary bank systems that have linked up foreign ACH networks.

Canada-U.S. Payments

The number of trade payments between Canada and the U.S. is likely to grow rapidly due to the free trade agreement between the nations. At this time there are two U.S. banks that provide Canadian EFT/EDI services. Harris Trust and Savings Bank and Mellon Bank are the U.S. Banks that offer cross-border EFT payment services. These institutions have established relationships (Harris is a subsidiary of the Bank of Montreal) with Canadian banks in order to give their customers the option of paying Canadian based-trading partners.

As the number of Canadian and U.S. trade payments increases more financial institutions may decide to offer Canadian - U.S. trade payment services.

The flow of a U.S. to Canada (northbound) EFT/EDI payment is as follows:

U.S. - Canadian EFT Payment

DAY 1	DAY 2
U.S. corporation sends payment instructions in a NACHA format (CCD, CCD+, CTP or CTX), an ANSI X12 820, or a proprietary format to its U.S. bank The Canadian bound peyments are transmitted to the Canadian bank and the Canadian bank processes (Note: either the U.S. or the Canadian bank may translate the information)	The items are delivered and settled The remittance data is either delivered on day 1 or on day 2

The current Canadian EFT system does not have a format capable of carrying large amounts of remittance information. The Canadian standard CPA 005 is similar to a CCD+ in that it carries a minimal amount of remittance information. Thus, remittance information, such as an 820, cannot be transmitted through the Canadian clearing system.

The remittance data is sent via a VAN or the information reporting system of the U.S. or Canadian bank and the payment is sent over the Canadian clearing system if the receiver does not have an account with the originating Canadian bank, or the payment and remittance travel together if the receiver has an account at the originating Canadian bank.

The methods for making U.S. Canadian EFT payments outlined above will continue to be employed. There is a possibility that Canadian financial institutions will develop an EDI/EFT network. Such a network would most likely utilize ANSI X12 standards and carry Canadian dollar and remittance information together.

TAPS

The Transcontinental Automated Payment Service (TAPS) is a gateway to foreign banking systems and in turn, to foreign ACH networks. TAPS is operated by the Bank of Scotland. The TAPS network provides a low cost alternative for making international payments. The cost of an international wire transfer or draft is significantly higher than the cost of a TAPS payment.

The basic flow of a TAPS payment is as follows:

TAPS Payments

DAY 1	DAY 2	DAY 3	DAY 5
Originating corporation sends a file to U.S. bank	NACHA formats are translated into TAPS formats	Originator's account is debited	Funds are available to the receiver
ACH processing is done.	File is transmitted to Bank of Scotland	Foreign exchange is purchased by the Bank of Scotland	
All foreign items are out-sorted		The Bank of Scotland sends transactions to the appropriate receiving bank	

The Bank of Scotland has access to the ACH networks of 13 countries. The TAPS network enables an originating bank to send a payment file to a receiving bank located in any one of the 13 countries. TAPS reformats the payment file to conform with the payment formats of the receiving bank's ACH. The payment file is then sent to the receiving bank through its ACH.

At this time, only PPD type entries (consumer) can be sent over the TAPS network. However, it may be possible in the near future for corporate payments to be made using the TAPS system.

Future International ACH

A future consideration is the possibility of connecting national ACH systems so that ACH payments could be sent internationally to a large number of countries. The difference between this option and the existing proprietary bank systems is that the ACH networks would link-up themselves on behalf of all ACH participants in their country.

In light of the fact that most corporations prefer to receive payment and remittance information together, it seems logical that such a system would allow EDI payment information (presumably formatted in EDIFACT standards) to flow with the payment. This would require foreign payment (ACH) systems to develop and implement formats similar to the CTX format. Most countries payment systems do not support applications that allow the payment and the remittance detail to be sent and received together. However, the system would not necessarily need to allow the payment and remittance information to be sent together. An international ACH system could require that the remittance be split from the payment and sent through a VAN similar to the way U.S. and Canadian trade payments are made today. NACHA will be completing a staff study in the future on different ways to handle international EDI payments.

GLOSSARY

ACH Credit is an ACH transaction which moves funds from the originator's account to the receiver's account.

ACH Debit is an ACH transaction which moves funds to the originator's account from the receiver's account.

ADEPT is Automated Deposit for Electronic Payment of Taxes. ADEPT is a test program, where taxpayers, through a financial institution, can pay their Federal Tax Deposits electronically.

ANSI ASC X12 an Accredited Standards Committee (ASC) of the American National Standards Institute chartered to develop standards for inter-industry electronic data interchange.

BAI Bank Administration Institute, often referred to for its information-reporting standards.

CCD+ is a NACHA format which is used for corporate to corporate payments. The CCD+ carries remittance information in an 80 character addendum record.

CPA 005 is a Canadian electronic funds transfer message which carries limited remittance information.

CTP Corporate Trade Payment. A NACHA format which is used for corporate to corporate payments. The CTP can carry remittance information in fixed field format in 4990 addendum, 80 characters each.

CTX Corporate Trade Exchange. A NACHA format which is used for corporate to corporate payments. The CTX can carry remittance information in 4990 addendum, 80 characters each. The addendum can carry X12 formatted information.

Electronic Dealer Drafting Automobile dealers can opt to pay their manufacturers via the ACH network. Manufacterures can utilize a CCD+ format, which provides space for the necessary remittance detail.

EDIFACT stands for Electronic Data Interchange for Administration, Commerce and Transportation. EDIFACT is a set of message standards approved by the UN for international electronic data interchange the messages are approved by the United Nations.

Fedwire is an electronic funds transfer system operated by the Federal Reserve. The Fedwire system has same-day finality and primarily carries large dollar payments.

IV-D cases are child support cases in which the State Child Support Enforcement Agency provides services (e.g. collects the payments from the absent parent).

ODFI Originating Depository Financial Institution. A financial institution which originates a transaction into the ACH network.

non-IV-D cases are private child support cases that are usually settled privately or in court.

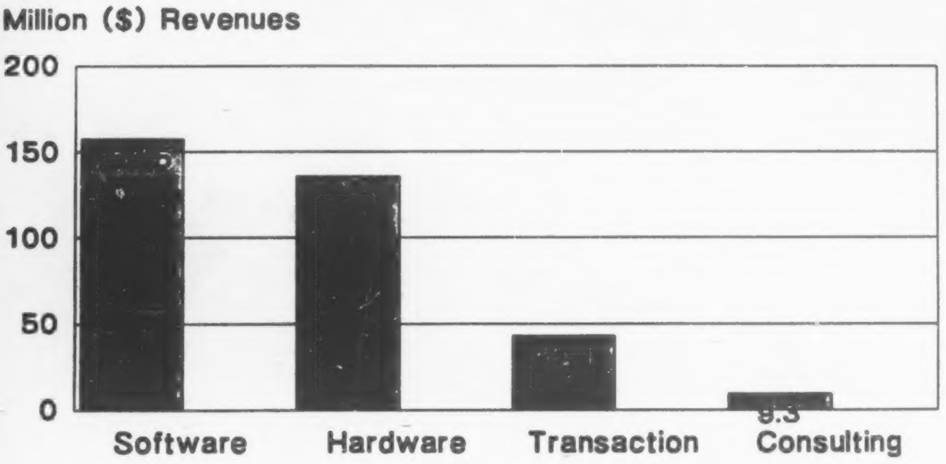
S.W.I.F.T. The Society for Worldwide Interbank Financial Telecommunications is an international network that moves messages and funds transfer instructions internationally among member financial institutions.

TAPS is the Transcontinental Automated Payments Service. The TAPS network is a proprietary system operated by the Bank of Scotland which links up foreign ACHs through partner banks.

VAN Value-Added Network. A third party service provider that facilitates the transmission of electronic data among multiple trading partners.

Vendor Express is the U.S. Treasury's program which utilizes the ACH network for making Federal government vendor payments. The Vendor Express program uses the CCD+ format.

Exhibit A

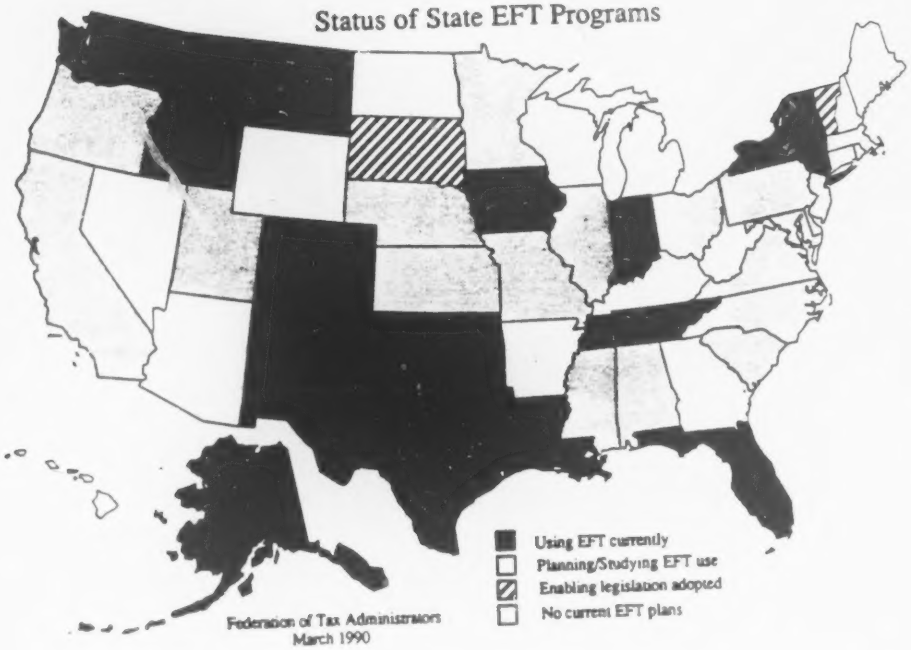


Estimate of the EDI Market For 1989

Source: EDI Research Inc.

Exhibit B

Status of State EFT Programs


■ Using EFT currently
□ Planning/Studying EFT use
▨ Enabling legislation adopted
□ No current EFT plans

Federation of Tax Administrators
March 1990

Exhibit C

STATUS OF STATE ELECTRONIC FUNDS TRANSFER (EFT) PROGRAMS

STATE	EFT Taxes	Taxpayers Affected	Payment Options	Filing Date	Eff. Date	State Contact
Alaska	All taxes	All tax payments of $100,000 or more due with a return required to be filed monthly, or payments of $150,000 or more with returns required to be filed annually	Fedwire	Depends on tax	1/1/89	Vernon Voss 907-465-2360
Colorado (Optional Program)	Program is optional for any tax	Any taxpayer desiring to use EFT may do so	ACH Credit and Debit	Varies depending on tax	2/90 target date	Julia Sherry 303-866-3776
Florida	Sales and use, corporate income, motor fuels, gross receipts, and insurance premium taxes	Taxpayers with prior year liability of $200,000 or more for each tax	ACH Debit; will permit ACH Credit under some conditions. Fedwire as emergency backup	Monthly for sales and use, motor fuels, gross receipts; quarterly for corp. income and insurance premium taxes	2/1/90	Gerald Johnson 904-488-3171 or EFT Phone Bank 904-487-7972
Idaho	Any tax where the taxpayer makes a payment of $100,000 or more in one payment	Payments of $100,000 or more	ACH Debit, Fedwire, interbank transfer	Varies depending on tax	7/1/88	Steven Miller 208-334-7780
Indiana	Sales and use, withholding, corporate estimated, special fuel taxes	All taxpayers making $80,000 in total corporate estimated tax payments, $240,000 in each of all other taxes covered - during the previous year	ACH Credit and Debit, Fedwire, certified check	Monthly for sales and use, withholding, special fuel, quarterly for corporate estimated	11/87	Patrick Berry 317-232-3932
Iowa	Sales and use taxes, withholding, corporate estimated payments, and motor vehicle use taxes	Taxpayer required to file bi-weekly for sales and use and withholding taxes Taxpayers with a total prior year liability of $80,000 or more in corporate estimated tax	ACH Credit and Debit, Fedwire as emergency backup	Bi-weekly for sales and use and withholding, quarterly for corporate estimated payments	4/1/90 (by regulation)	Robert Mathis 515-281-3571
Louisiana	Severance taxes	All tax payments of $100,000 or more	Fedwire	Monthly	1/1/89	Rockey Hebert 504 925 7327
Montana	Any tax where a single tax payment is $500,000 or more	Tax payments of $500,000 or more must be made via EFT	Fedwire	Varies depending on the tax	10/85	Joe Filson 406 444 4018
New Mexico	CRS-1 (sales and use and withholding) and oil and gas taxes	Average monthly combined liability for CRS-1 or oil and gas taxes of $25,000 based on previous year or any individual payment of $25,000 or more	ACH Credit or Fedwire; check if received at least two days prior to the due date	Monthly	1/1/89	Jody Larson 505 827 0830

Federation of Tax Administrators
2/15/90

Exhibit C (continued

New York (State, NY City, City of Yonkers)	Income tax withholding	All taxpayers withholding $400,000 or more in NY tax with an annual NY payroll of at least $7.5 million, and which had 250 or more NY employees during the last reporting period	ACH Credit and Debit, Fedwire, or certified check	Quarter-monthly	1/1/90	Joe Kneis 518-457-3500 or 1-800-CALLTAX (in state)
Oklahoma (Optional Program)	Gross production tax	Any liable taxpayer may use	Fedwire	Monthly	1/87	Bruce McIntyre 405-521-3176
Tennessee	Sales and use, franchise, excise, beer, tobacco, gas, gross receipts, and motor fuel taxes	Taxpayers which are expected to average payments of $20,000 or more per month based on previous year history	ACH Credit and Debit, Fedwire, deposit in TN bank, cash	Monthly	1/90 to 3/90 (phase-in)	Kay Lunsford 615-741-2505
Texas	Taxes imposed by any agency collecting over $100 million including all major (30) taxes	All taxpayers which paid $2 million or more in any one tax during the previous year required to pay via EFT	ACH Credit and Debit, Fedwire	Varies depending on the tax	1/1/90	Kristin Roberts 512-440-4703 EFT Hotline 1-800-766-7777
Washington State	Motor fuel taxes	Taxpayers with liability of $500,000 or more	Fedwire	Monthly	7/1/87	Marv Ostby 206-753-5522

Source: FTA and Committee on State Taxation

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2/16/90

Exhibit D

BANKERS' EDI COUNCIL
Organizational Chart

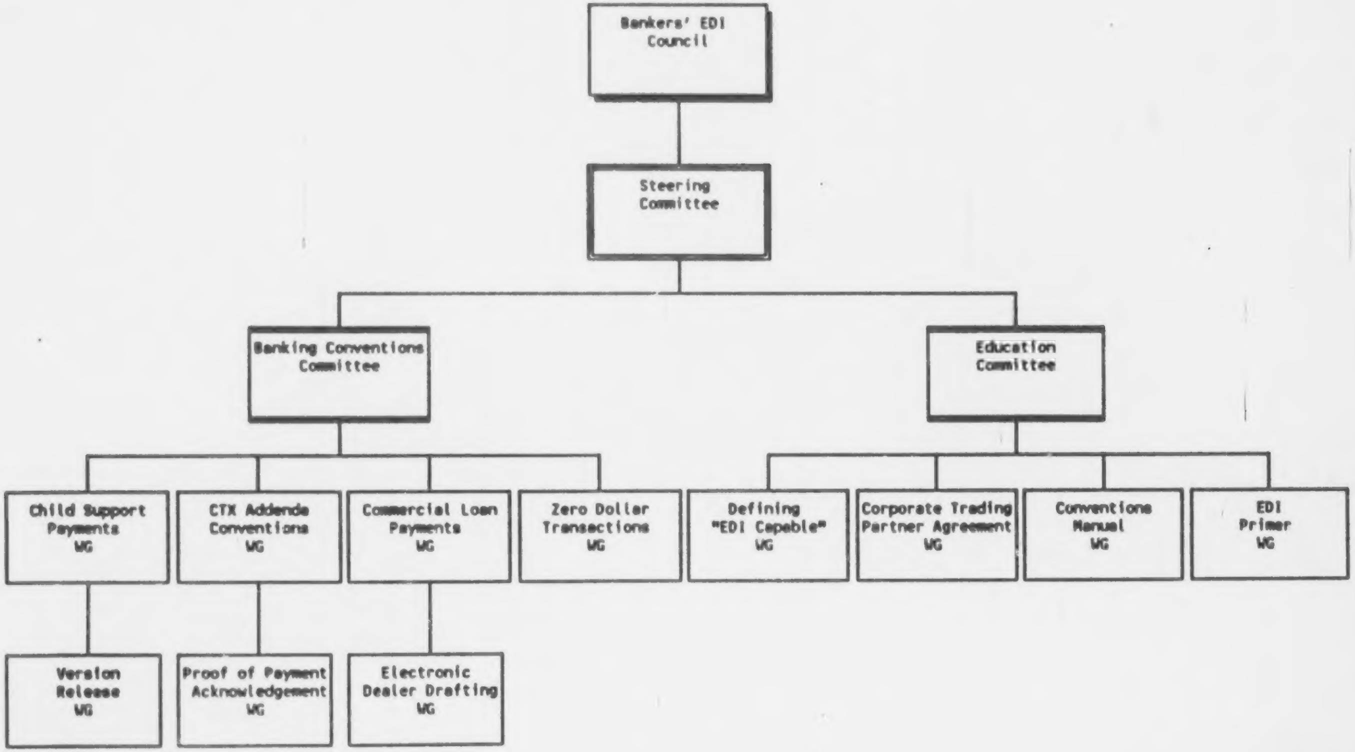

Bankers' EDI Council
Steering Committee
Banking Conventions Committee
Education Committee
Child Support Payments WG
CTX Addenda Conventions WG
Commercial Loan Payments WG
Zero Dollar Transactions WG
Defining "EDI Capable" WG
Corporate Trading Partner Agreement WG
Conventions Manual WG
EDI Primer WG
Version Release WG
Proof of Payment Acknowledgement WG
Electronic Dealer Drafting WG

Exhibit E

FEDERAL RESERVE STATEMENT OF DIRECTION ON ELECTRONIC DATA INTERCHANGE (EDI)

September 15, 1989

The Federal Reserve System has followed with interest the evolution of the concept of Electronic Data Interchange (EDI) as a means of automating the exchange of business data between corporate trading partners, and the Federal Reserve believes that current developments in this field could enhance the nation's payments system. The current and potential involvement of the banking industry in EDI services is also significant. In light of the Federal Reserve's role as a provider of electronic payments services and the linkage between electronic payments and supporting EDI data, the corporate and financial communities have asked the Federal Reserve to state its future direction with respect to EDI, particularly as it relates to the processing of payment related data.

The Federal Reserve will continue to support the exchange of payment related data that are currently accommodated in its ACH and funds transfer services. ACH corporate trade payment data, Fedwire structured third party information, and several non-value payment related messages are examples of payment related data that are transmitted by Federal Reserve electronic payments systems today. It is our assessment that the electronic transmission of remittance data with the related payment will contribute to the overall efficiency of the EDI process, as well as encourage the use of electronic payments as a primary means of accomplishing corporate payments. In handling these types of transactions, it is not anticipated that the Federal Reserve will perform extensive editing of the imbedded EDI data. Rather, the traditional focus on those edits that are needed to assure the accurate posting of payments at receiving depository institutions will be maintained.

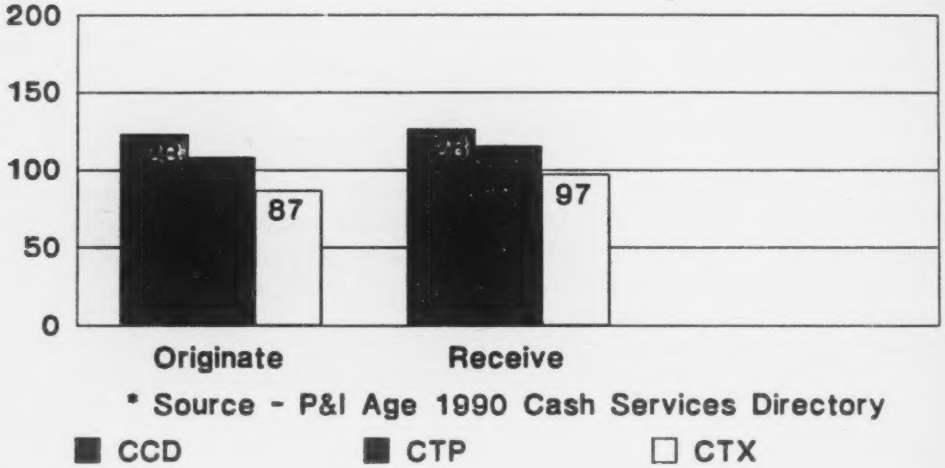
Undoubtedly, as EDI continues to evolve, specific issues and questions will arise concerning the appropriate relationship between EDI and the payments system. The Federal Reserve intends to work cooperatively with the financial industry to address these issues and develop solutions that continue to enhance the payments mechanism. In particular, questions have arisen concerning the Federal Reserve's willingness to handle non-payment related EDI data. Because electronic payments systems have unique requirements related to payment settlement, contingency, timeliness, and security, they may not be appropriate or cost effective vehicles for EDI applications not directly related to payments, such as non-value transactions designed specifically for the communication of catalog data, price quotes, requests for bid, purchase orders, or shipping information. Nor does it appear that such applications would directly contribute to improved efficiency of the payments system; consequently, these applications would more appropriately flow through channels other than the payments systems. Therefore, the Federal Reserve does not anticipate that it would modify its electronic payments services to facilitate transmission of data that do not clearly fall into the payment related category unless a compelling business case were established.

Many organizations that are currently developing or are on the verge of implementing automated EDI systems have also expressed keen interest in the Federal Reserve's direction on electronic payments formats. The Federal Reserve, in consultation with the financial industry, has been investigating whether existing payments formats meet future business requirements since formats are a key element in the future system design of both Federal Reserve and private sector payments and EDI systems. Although these discussions continue and more flexible and efficient formats may eventually be developed for future implementation, the Federal Reserve does not envision requiring that depository institutions use a single format for all EFT services and does intend to continue its support of existing payments formats for the foreseeable future. At the same time, however, the Federal Reserve may adopt a single format for its own internal use.

In summary, the Federal Reserve is interested in and committed to following and supporting further evolution of the EDI concept, particularly as it promises to improve the efficiency and effectiveness of the payments system. The Federal Reserve intends to continue working with the National Automated Clearing House Association, the American National Standards Institute, and other industry groups to address issues and seek solutions to problems or opportunities associated with EDI, the payments system, and future payment formats.

Exhibit F

EDI Capable Financial Institutions



* Source - P&I Age 1990 Cash Services Directory

EDI NEWS, January 15, 1990

Exhibit G

	GEIS, FIB & SEAFIRST	Harbinger & 3 Banks	IBM & First Chicago	SCC & 8 Banks
COSTS	1) Costs are determined by the banks as part of a portfolio of services they provide the corporate customer	1) Standard ACH charges plus EDI communications charges ($.30/1,000 characters)	1) Standard IBM network charges apply. Charges for PAYSTREAM vary depending on volume and components of the services used	1) Costs will include 2 components -- communications fees and banking fees. This will involve the Sears' volume based communications charges and the participating banks' fees
SERVICES AVAILABLE THROUGH THE ALLIANCE	2) Alliance is designed to offer different levels of products and services to the banking community which they can in turn provide to their corporate customers. The program is made up of six different levels of service ranging from just EDI*Express mail box to using the BPS*Central and being a partner with EDI*Express and share revenues from those sales. Degree of participation of VAN/bank alliance is up to the bank.	2) Full list of EDI/EFT services including electronic pipelines for financial and non-financial. Alliance is designed to provide corporations with the ability to communicate a full range of transactions electronically.	2) Customers have access to First Chicago's PAYSTREAM, which gives companies the ability to pay suppliers electronically. Payment instructions are transmitted over the IBM Information Network, and First Chicago acts on instructions by sending payments electronically (if the receiving institution is capable of this) or by sending a check (if they are not).	2) SCC will transport a payment file to the paying company's designated bank. The bank splits the payment and remittance detail, translates it into the formats required by receiving bank and trading partner and warehouses payment until it is presented to ACH for settlement.
EFT/EDI STANDARDS AND FORMATS SUPPORTED	3) NACHA, BAI Lockbox, ANSI X12, (and other North American standards), EDIFACT (when available). BPS Central software offers complete flexibility to support transmission format combinations (i.e., dropping 820s into CCD+ or CTX depending on customer requirements).	3) Support CCD, CCD+ and CTX, and all of the North American EDI standards (X12, TDCC etc.)	3) Payment instructions and related messages are communicated in the ANSI formats.	3) For the paying company any format including the ANSI 820 or a proprietary format is supported. for the receiving company getting detail through SCC, that ANSI X12, BAI and a report format are offered.
NUMBER OF BANKS IN THE ALLIANCE	4) 2 banks are currently participating in this program: First Interstate Bank and SEAFIRST	4) Currently have 3 banks and are in the process of adding a fourth. Current banks are: Citizens and Southern, Marine Midland, First Bank System	4) Currently only First Chicago and IBM Information Network	4) 8 banks are currently allied with SCC, these are: Bank of America, CoreStates, Continental, National Bank of Detroit, Harris, The Northern Trust, First Wachovia, and Mellon
EXCLUSIVE OR NON-EXCLUSIVE	5) Non-exclusive--GEIS is looking to bring in other banks into the fold.	5) Non-exclusive	5) Non-exclusive	5)Non-exclusive

Source: Corporate EFT Report & EDI News

President's Council
on Management Improvement

Governmentwide Procurement Automation "Concept"

April 1990

FOREWORD

This Concept Paper proposes a unified Government-wide Procurement Automation effort to: enhance interagency cooperation in the development, implementation and maintenance of generic procurement computer networks, programs and databases, and to; minimize agency costs associated with the duplication of similar automated procurement systems and activities.

It should be clearly understood, that this paper is not an implementation plan which identifies specific projects, resources and schedules. It is proposed that implementation plans for these follow-on projects be developed after obtaining the appropriate level of approval and commitment to implement the concepts presented herein.

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Systems Description and Benefits.................................. 3

Government-wide Procurement Automation Program Concepts............ 4

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SUMMARY OF THE PROCUREMENT AUTOMATION CONCEPT PAPER AND RECOMMENDATION FOR IMPLEMENTATION OF P OJECTS

SCOPE

The Concept paper outlines a method by which the Federal Government can automate the procurement process. The Concept is designed to benefit agencies by developing a framework to integrate and unify the various efforts of automation. The Concept advocates a distributed data base approach that relies on electronic communications to interchange data. It proposes a modular project approach and allows for various aspects of automation to be developed and phased into an overall procurement automation strategy. By developing a concept, a roadmap is provided to give directions to an implementation process.

The Concept paper presents three objectives, two assumptions, and five elements. The elements show the components of a unified government-wide automated procurement process. In addition, a recommendation is presented for the development of a Follow-up Implementation Plan.

OBJECTIVES OF THE PROGRAM

1) To improve the productivity and effectiveness of individual procurement automation systems of the Federal procurement agencies through the interchange of appropriate data, documents, databases, and software within the Government and with the private sector.

2) To establish a basic framework that enables agencies and businesses involved in the Federal acquisition process to take advantage of current automation networking and technology capabilities. This will permit the processing and interchange of electronic information products and services.

3) To establish a Government-wide management and organizational mechanism to facilitate the development and implementation of Federal acquisition automation activities and reduce the costly duplication of effort to automate the procurement process.

BASIC ASSUMPTIONS

1) It will take significant attention from both top management and the acquisition community to make those involved with the implementation of the government-wide automated procurement project understand and appreciate the advanced user capabilities and dynamic nature of procurement automation technology.

2) It is an essential assumption that a proper

commitment of resources and top level management support will be obtained.

ELEMENTS of AUTOMATION CONCEPT

1) Acquisition Telecommunications Network (ATN): The acquisition community must be able to connect their respective desk side computer devices to a commercially available national computer network capability to carry out the other features of the program. The ATN will take full advantage of the GSA FTS 2000 contracts.

2) Electronic Data Interchange (EDI): EDI is a generic term used to describe the automated interchange of the full range of business transactions, including acquisition transactions. EDI needs to be implemented as part of the proposed program.

3) Federal Information Processing Standards (FIPS): The full potential of the network can only be achieved with the development of, and reliance on, standards to permit computer to computer transfer of electronic data, including standards for EDI transactions. The Government may supplement such EDI standards with an acquisition data dictionary that focuses on Federally unique acquisition data elements.

4) Common Databases: Common databases involving two or more organizations need to be developed and made available in electronic format to the acquisition community. These include such databases as the Federal Acquisition Regulation (FAR) and the Commerce Business Daily (CBD).

5) Generic Program Libraries: A Library of public domain acquisition computer programs needs to be made available to the acquisition community through public clearinghouses, such as the one operated by the National Technical Information Service, and various private dial-up bullecin board services.

RECOMMENDATION FOR A FOLLOW-UP IMPLEMENTATION PLAN

It is recommended that OMB designate a sponsor to initiate the necessary action to develop follow-up Implementation Plans for Procurement Automation Projects. These plans should:

1) present an overall strategy that emphasizes an incremental and modular project approach to providing an integrated communications network.

2) identify and analyze the implementation alternatives, cost benefits and time-phased schedules associated with each Procurement Automation Project.

SYSTEMS DESCRIPTION AND LONG TERM PROJECTED BENEFITS
OF
THE PROPOSED PROCUREMENT AUTOMATION CONCEPT

SYSTEMS DESCRIPTION

1. The acquisition process will converge into a paperless process in which the various Government and industry functional participants, will electronically disseminate, receive, manipulate, analyze, store and manage acquisition information and data using desk side computer devices interconnected to Local and Wide Area Networks.

2. The paperless acquisition process will constitute a formidable and extensive driving force in the development and usage of Electronic Data Interchange and EDI/FIPS (Standards). Several EDI/FIPS (Standards) Transaction Sets may need to be developed to accommodate federal acquisition requirements.

3. The majority of acquisition data and acquisition software will be readily accessible from multiple databases and multiple software libraries residing on multiple networks.

4. Appropriate acquisition planning information, solicitation instruments and other information will be available to industry acquisition personnel via interactive networks. Business firms will be able to remotely access acquisition data and information with generic "Off-the-Shelf" software retrieval packages. This, in turn, will provide these firms the capability to timely identify and automatically screen potential competitive business opportunities within their respective areas of interest.

BENEFITS

The proposed Procurement Automation Program will reduce costs and increase acquisition efficiency by:

1. facilitating interagency data and software sharing and reducing the resources involved with the independent and uncoordinated development and maintenance of duplicate agency automated acquisition systems and databases.

2. providing large and small business firms direct, on-line, remote access to virtually all federal competitive small purchase and contract opportunities on a timely and cost effective basis. This will obviate the need to separately develop and maintain Bidders List and Commerce Business Daily type support systems.

GOVERNMENT-WIDE PROCUREMENT AUTOMATION CONCEPT

PURPOSE: The purpose of this paper is to present an overall Government concept and strategy for: sharing appropriate automated acquisition data, documents, databases, and software; and for automating the acquisition process in line with implementing a paperless business environment. The paper was requested by the Systems Committee of the President's Council on Management Improvement (PCMI) and prepared by an Interagency Task Group comprised of representatives from OFPP, DOD, NASA, HHS, GSA, VA, DOT, DOE, DOI, DOC, EPA, USDA, and DOEd.

GOALS/OBJECTIVES: The goals and objectives of the proposed Government-wide Procurement Automation Concept are:

1) To improve the productivity and effectiveness of individual procurement automation systems of the Federal procurement agencies through the interchange of appropriate data, documents, databases, and software within the Government and with the private sector.

2) To establish an infrastructure and basic framework that enables agencies and businesses involved in the Federal acquisition process to economically and expeditiously take full advantage of current automation networking and technology capabilities, thereby facilitating the processing and interchange of appropriate electronic information products and services.

3) To establish and institutionalize a Government-wide management and organizational, mechanism that continually facilitates the cost effective development, and implementation of Federal acquisition automation activities and reduce the costly duplication of effort to automate the procurement process.

BACKGROUND: At present there is no unified approach throughout the Government to automation of the acquisition process. The approaches being taken by agencies vary from business as usual with no automation to the implementation of expert systems, with almost every variation in between. The variations are equally as great within the private sector.

The one common thread in this diverse fabric is the basic requirement inherent in the Government acquisition process that the Government and industry (including educational institutions) must transmit large quantities of data back and forth. There is a real need to facilitate this transfer.

The acquisition process involves a continual exchange of data between vendors and the Government. Solicitations, offers, cost data, invoices, payments, administrative information, etc. flow back and forth. Many of these data also move through several different offices within the Government and within the vendor's organization. Many vendors and Government agencies have developed limited automated systems to help handle this data flow and to avoid retyping data. These allow data to be moved more quickly and with greater accuracy, while conserving overburdened human resources. As the use of automated systems expands, it becomes increasingly clear that some standardization and central control will be of value in terms of both avoiding duplication of development/maintenance costs and minimizing the number of different systems any one vendor or agency has to deal with. Although it may be impossible (and unnecessary) to develop standard systems that satisfy all users' needs, it is feasible and virtually a requirement that the various Government agencies move in a unified direction in terms of establishing basic standards for communication and data interchange. The Defense Department has already commenced a major effort in this area; the civilian agencies are in a position to take advantage of DOD's work and thus minimize their expenditures and risks.

ASSUMPTIONS: The concepts and strategies in this paper are based on the following assumptions:

1) It will take significant attention from both top management and the acquisition community to make those involved with the implementation of the government-wide automated procurement project understand and appreciate the advanced user capabilities and dynamic nature of procurement automation technology.

2) It is an essential assumption that a proper commitment of resources and top level management support will be obtained.

3) Automation technology either is or will soon be commonplace within the Federal acquisition office setting for accomplishing contract preparation and placement, contract management, and internal management controls. The private sector will also take advantage of this technology to a similar and perhaps even greater degree. Even small business firms are becoming more involved in this technology, but their continued interests and concerns need to be adequately addressed and properly accommodated in the subject Procurement Automation Program.

4) Technology will exist to support an Acquisition Telecommunications Network (ATN) for acquisition functions, comprised of a single network or multiple, separate networks, for

use by the Federal acquisition community. Networks with these features that support programmatic and other functional organizations are continually emerging both in the public and private sectors. For example, the FTS-2000 system, recently acquired by GSA, may serve the purposes of an ATN. Similarly, the private sector commercially offers several comprehensive and proven networks and network related services that would adequately and economically serve as a ready made ATN. The point to be made, is that there is no need to develop an ATN when this capability already exists and can be acquired as an existing off-the-shelf service.

5) Agency managers will encourage use of the ATN and desk side computer capabilities and/or central computer facilities to share non-organizational unique information, data, data bases, software programs, systems and designs with other acquisition personnel in other organizations.

6) A fundamental assumption in this document is that the world business process, including Government acquisition as a subset, is moving toward a paperless environment. The change will certainly not be an instant one but will be an evolutionary process.

GOVERNING FACTORS: The factors governing the proposed Government-wide Procurement Automation Program are as follows:

1) It is estimated that the Federal acquisition agencies deal with more than 250,000 firms interested in doing business with the Government; that there are more than 2500 geographically dispersed Government procurement offices; and that at least 150,000 Government employees, and, a similar number of private sector employees are involved.

2) The Program includes all of the processes governed and/or addressed by the Federal Acquisition Regulation, including the functions interfacing with contracting such as requisitioning, finance and payment, transportation, receiving, etc. It will be compatible with existing agency systems and with other programs such as the integrated financial management program referenced in OMB Circular No. A-127.

3) Acquisition functions/activities begin with the formulation of budget items for goods and/or services and end with the official closeout of the contracts for these items.

4) The subject automation focuses on interagency and interagency/industry issues. While it may assist the process of identifying potential duplication and non-standard, customized approaches to automation within agencies, the responsibility for detecting and initiating any needed corrective actions involved with such issues resides with the agencies.

5) Automation as proposed herein refers to the hardware, software, and telecommunication products, services and documentation procured with Government funds for support of the Federal acquisition agencies in the performance of their respective assignments, duties, and functions.

6) It should be noted that it is not appropriate for the Government to mandate the specific details of an automated system which must be in place in a vast number of enterprises with which the Government does business. However, an overall approach to business automation can be established so that data collected throughout the Government acquisition process is in a common form that enhances electronic collection and transmission among various networks and systems. Accordingly, the subject program proposes an 'Open Systems' approach to accommodate incremental and modular development and implementation of an overall integrated network capability.

ELEMENTS OF AUTOMATION: There are five basic automation elements associated with the implementation of the proposed Government-wide Procurement Automation Concept. They are discussed below under the major headings: Acquisition Telecommunications Network (ATN), Electronic Data Interchange (EDI), EDI/FIPS (Standards), Common Data Bases and Generic Program Libraries.

1) Acquisition Telecommunications Network (ATN): The acquisition community must be able to connect their respective desk side computer devices to a commercially available national computer network capability. This is an essential and mandatory prerequisite to the successful implementation of the other features and capabilities outlined in this program. The use of this commercially available computer network capability in conjunction with FTS 2000 services, coupled with the implementation of the following elements and strategies, collectively constitutes an `enabling technology' that will provide the means by which acquisition personnel can easily and readily support the Government-wide aspects of this program.

The suggested ATN is envisioned to include one and eventually more commercially available networks, FTS 2000 services and in-house networks that can intercommunicate. Since there are a number of well established, cost effective, and highly reliable commercial network capabilities available, the subject program requires only up-front software, implementation and network usage expenditures, not a network development expenditure.

The ATN 'enabling technology' includes the interorganizational sharing of information and data via Electronic Mail, Bulletin Boards, selected on-line data bases and files, 9 track tapes, PC diskettes and high speed printer output.

2) Electronic Data Interchange (EDI): Electronic Data Interchange (EDI) is a generic term used to describe the automated interchange of the full range of business transactions, including acquisition transactions. Since EDI transactions as currently defined exclude textual data, the use of the term EDI in this paper is expanded to include the 'digitization' of documents, text, tables, drawings, photographs, art-work, etc. as well as formatted data and conventional transaction sets.

Today the preponderance of business transactions involves paper being passed between parties. An ever growing part of that paper is generated on a computer by the originator. Once delivered the receiving organization frequently converts that paper into automated form for computer processing. EDI aims at eliminating paperwork transactions with an internationally accepted computer to computer system for the exchange of business data.

EDI is viewed as an essential element of our broader commitments to improve the way we in the Government conduct business with industry and create a paperless environment. EDI has been shown to contribute to improved systems performance in such key areas as: reliability, integrity, quality, productivity, competition, security and interoperability. Most importantly, EDI enables the Government to shorten response times to user requirements, rely more heavily on industry for support and reduce Government's in-house support investment. Industry is moving toward higher customer responsiveness characterized by such approaches as just-in-time inventories flexible manufacturing, automated warehousing and rapid delivery. Such efforts require electronic communications. Manufacturers cannot operate a production line with only 7 days inventory, if they are in a paperwork environment because paper exchange does not leave enough time to adjust for change in prediction schedules, misrouted shipments, breakdowns, errors and other problems which affect tightly scheduled operations. Banks cannot virtually eliminate float without electronic funds transfer.

Government agencies will continue to implement EDI with or without formal direction. However, a common approach to EDI would give impetus to the program, minimize duplication of efforts among the Federal agencies and present a coordinated approach to the more than 250,000 vendors doing business with the Government.

There are four basic elements of EDI: 1) Transaction Sets which describe the formats and contents of the documents being exchanged. 2) Data Dictionaries which define the data elements to be transferee. These Dictionaries provide the basis for translating users' data into and out of EDI data elements. 3) Interchange Procedures which define how the interchange will take place. These procedures regulate such features as packaging (enveloping), assured delivery and security. 4) Delivery Systems which consist of hardware, software and networking employed in the actual transfer of information. EDI partners (i.e., senders and receivers) decide on the methods of transmission. Third party vendors and micro based software using commercial network capabilities are the most prevalent techniques employed presently.

EDI takes information from one data base, translates that data into standard (EDI) data elements, formats the data into transaction sets and communicates those transaction sets to another party in accordance with established procedures and agreed to routing. Once received and validated, the transactions are translated into formats and data elements appropriate to the receiving activity's ADP system.

The success of EDI is contingent on the capabilities: 1) to efficiently manage the access of data required for transactions between parties, 2) to translate these data into and out of standards, and 3) to automate the processes which produce and utilize EDI data. Benefits of EDI diminish rapidly if data must be manually added at the point of origin or printed in hard copy at destination. Well defined and easily accessible data facilitates the translation into and out of standards without forcing major redesign. This means that EDI can be implemented rapidly with low cost, commercially available software and services -without altering existing systems.

3) EDI/FIPS (Standards): The full potential of the network can only be achieved with the use of appropriate existing standards, supplemented with the development of unique acquisition standards.

The American National Standards Institute and its X12 Standards Committee for the last several years has sponsored an extensive effort to standardize the computer to computer transfer of electronic data. This effort has received broad support from industry and similar support from several Government organizations. Many industry firms and their trading partners have been successfully exchanging ANSI X12 Standard electronic acquisition data for some time. Thus it logically follows - if businesses with their variety of diverse interests and activities not only use but aggressively insist on ANSI X12 Standards - then Government organizations with their diverse interests should be able to derive similar benefits using ANSI X12 and similar national and international voluntary standards. The results of this on-going effort will be reflected in the EDI/FIPS (Standards).

The Government needs to supplement the EDI/FIPS (Standards) with a standard acquisition data dictionary that focuses on Federally unique acquisition data elements, including those that specifically involve organizational interfaces. In addition, and as a complementary effort, the Government should systematically document the acquisition automation requirements to support the data elements presented in the proposed data dictionary.

It should be noted that the use of EDI/FIPS (Standards) does not impose unreasonable restrictions on organizational data, systems or operations. The interface between the EDI/FIPS (Standards) and the organization's data can be `facilitated' by a relatively inexpensive `off-the-shelf' software package. Since the identification, definition, and implementation of an acquisition data dictionary will involve data items used throughout the acquisition community, these standards like the EDI/FIPS (Standards) would be phased in over a reasonable period of time so as not to interfere with ongoing operations, or pending designs.

4) Common Data bases consist of those data bases and files that are useful to two or more organizations. For practical purposes they can be classified as <u>data</u>, <u>text</u> or <u>data & text</u> data bases and files. The FAR is an example of a <u>text</u> type data base and the CBD is an example of a <u>data & text</u> type data base. These data bases can be distributed through: desk side dial-up or computer to computer high speed telecommunication access; standard mainframe computer tape or disk pack formats; standard personal computer 5 1/4 - 3 1/2 floppy diskettes, CDROM medium, etc. The first distribution method requires a computer network capability, whereas the latter can use any `off-line' computer and a conventional mailing or courier service. It should be noted that the computer network method supports the collection of remote dial-up user inputs as well as the distribution of outputs as mentioned. The computer network method is especially applicable to a CBD type data base because of the requirement to collect data from thousands of remote sources, consolidate these data on a real time basis and then distribute it to many geographically disbursed organizations.

5) Generic Program Libraries involve public domain software: either generic stand alone acquisition programs or generic acquisition functions or routines that can be called from any number of main computer programs. Such a Library capability be set up to afford the same features and benefits provided by many of the popular libraries residing on public clearinghouses, such as the one operated by the National Technical Information Service, and private dial-up bulletin board services. In essence, this concept advocates the adoption of an established, proven and well received PC industry practice of using network libraries for sharing common programs and user defined functions. The only difference is that common acquisition oriented programs and functions will be made available in a separate library that primarily focuses on support of acquisition automation efforts.

MANAGEMENT STRATEGY: The proposed management strategy for the subject Procurement Automation Program follows the strategies applied to other successful Government-wide programs - while avoiding the start-stop shortcomings of the previous procurement automation efforts outlined in Attachment A.

Since the proposed management strategy is based on conventional management practices and stated or implied authorities of existing acquisition organizations, it is only necessary to identify the salient attributes of this strategy. They are:

1) The Government-wide Procurement Automation Program should be set up and managed similar to other successful major Government-wide programs and initiatives. Accordingly, OMB/OFPP should officially inform agency heads that the subject Procurement Automation Program constitutes a major Government-wide management initiative and that it will be monitored similar to other major initiatives.

2) A separate budget line item should be set up for this program. A separate line item will avoid arguments among the agencies as to how much is enough and what is an equitable pro rata share from each, and will demonstrate the top level support needed.

3) OMB/OFPP should perform the function of overall coordinator/expeditor for the program and serve in the same role as it does for other Government-wide acquisition matters. An output of this effort should be an overall strategy that addresses the project approach to automated procurement implementation.

4) The Procurement Executives of the Federal procuring agencies should determine what needs to be automated from an acquisition perspective and assign priorities to these needs. They should also be responsible for monitoring the status of projects and ensure that these projects are satisfactorily completed on schedule and within costs. In addition, the Procurement Executives should require their respective agency procurement organizations to submit annual agency unique acquisition automation plans for their approval. These plans should be sufficiently detailed to assist the Procurement Executives with identifying potential opportunities for the interagency sharing of acquisition automation efforts.

5) OMB desk officers should review and assess Procurement Executive approved agency unique acquisition automation plans for inclusion in agency budgets, as appropriate.

6) Consideration should be given to awarding a competitive contract or establishing a special implementation project team, composed of public and private sector

representatives, to fully develop and implement the automation projects. Because of budgetary restraints and the difficulties experienced in recruiting and hiring qualified persons, most agencies lack adequate resources to fund or staff the program as recommended. The funds solicited for implementation should include salaries and expenses of the implementation team for the duration of the implementation effort.

ATTACHMENT A

Summary of Previous Procurement Automation Efforts

The need to address procurement automation from a Government-wide perspective was recognized in the late 1970's with the establishment of the Procurement Automation Council (PAC). The PAC was sponsored by the Federal Acquisition Institute of the Office of Federal Procurement Policy (OFPP). The PAC was comprised of representatives from the major Federal procuring agencies. Its principal function was to provide an interagency information exchange service on procurement automation matters that might be of interest to the respective agency procurement organizations.

The first initiative of the PAC was to sponsor the preparation of a list of existing automated procurement systems in the Government. The purpose of this list was to promote the sharing of these systems with other agencies. In 1981, the Department of Energy funded and contracted for the preparation of a Compendium of Automated Procurement Systems in Federal agencies. This document was widely circulated to the Federal agencies. For all practical purposes this document did not contribute to the interagency sharing of a single system. One agency did attempt to use one of the listed systems, but completely changed it before using it.

The next major event that recognized the need to address procurement automation on a Government-wide scale resulted from the issuance of E.O. 12352 on Procurement Reform. One of the products of that Executive Order was a 1983 report on Procurement Reform that included a Long Range Plan for Procurement Automation. That plan was never implemented.

Within the following year, there was a renewed interest in procurement automation on the part of at least two relatively new Procurement Executives. Subsequently, the Acting Administrator of OFPP as Chairman of the Federal Executive Procurement Council, after obtaining support from the Procurement Executives, directed the PAC to prepare a document outlining the actions that could be taken to implement Government-wide procurement automation projects. The PAC identified several such projects in the form of project profile statements. These projects were approved by the Procurement Executive Committee and the profile statements signed by the Acting Administrator of OFPP. This action was instrumental in the 'fencing' of $2 million in GSA funds specifically for these approved projects. Subsequently, these funds were withdrawn as a result of initial Graham-Rudman budget actions at GSA.

The latest support for a Government-wide procurement automation program was initiated by the Systems Committee of the PCMI in late 1987. At that time, OFPP was requested to chair an interagency task group of agency executives to develop a concept paper on procurement automation. This document is the result of that action.

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TO: Chairman Sisisky
Chairman Torres
Members of the Subcommittees

FROM: Subcommittee Staff

SUBJECT: Hearing June 18, 1990
The Effects of Electronic Commerce on Small and
Medium Sized Businesses

Purpose of Hearing:

The modernization of American businesses is crucial to their competitiveness in an age of international commerce. How the use of advanced information technologies is adopted by both industry and government in the United States will have profound effects on the future of our economy. Large corporations have already seen the necessity and advantage of implementing electronic data interchange (EDI) and computer integrated manufacturing in order to save time, lower costs, reduce errors and increase productivity. The federal government must also enter into this telecommunications revolution in order to gain these same benefits and to continue to do business efficiently between government agencies and with private industry. The federal government, private industry and educational institutions currently transmit large quantities of data back and forth. It is imperative that there is a unified approach to the implementation of an automation system throughout government and industry that is easily accessible and open to all. Certain sectors of private industry have already told their smaller trading partners that they will have to do business with them electronically or not do business with them at all. This will certainly narrow the vendor base of these large companies and many small businesses will find themselves increasingly left out of the market. Public law and acquisition policy provides that small businesses cannot be denied the opportunity to compete in federal procurement and no barriers may be erected to their participation.

It is apparent that the move to paperless business transactions by electronic means is going to continue to grow and should be encouraged. At the same time, every effort must be made to assure the education and initiation of small businesses into the electronic world of business is carried out to their advantage. A report by the Logistics Management Institute points out that "the question is not when, but how small business contractors can be initiated into EDI contracting....This is an educationaal and maturation process that may take some time; but, just as the public previously adapted to and accepted telephones, facsimile machines, automated teller machines, direct deposit of funds, and PCs, EDI will become a way of doing business."

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The report further points out that there is evidence of increased opportunities for small businesses as a result of utilizing EDI. Some sophisticated small businesses who have already adopted EDI market their products or services over a wider range and to more prospective customers. This technology may be seen as an equalizer, not a competition inhibitor.

The purpose of the hearing is to ascertain the use of EDI and advanced computer technology in the United States by both government and industry. Questions to be answered are: What is the current state of electronic commerce in industry? Does the federal government have plans in place for a unified approach to the automation of the acquisition process? What current programs are underway and planned at federal agencies? What is the government doing to facilitate the participation of small and medium sized firms in government information and procurement after the implementation of EDI? What is the Department of Defense doing to implement programs to improve the way government does business, especially in such areas as just-in-time inventories, flexible manufacturing, automated warehousing and rapid delivery? Has the use of Electronic Invoicing and Payment facilitated compliance with the Prompt Payment Act?

Witnesses expected to testify will be from Department of Defense; Customs Services; Small Business Administration; Large Businesses; Small Businesses; Rand Corporation; and Trade Associations.

BACKGROUND:

Electronic Data Interchange (EDI) is the computer to computer exchange of common business documents using a standard format. Standard formats ensure that different companies can exchange business data without having to modify their computer systems. Electronic Funds Transfer (EFT) is the financial equivalent of EDI. Both of these are the tools needed to engage in Electronic Commerce. Businesses and government are starting to realize that EDI is a most efficient tool for exchanging business transactions. Even though this technology has been around for quite sometime, it has only been within the last few years that government and industry have started to plan the implementation of EDI on a broad scale. The impetus for government no doubt is the budget crunch and procurement scandals, for industry it has been competition from abroad.

The first major commercial users of EDI were the transportation industry, where the volume of communications (bills of lading, shipping directions, receipt acknowledgements, etc.) is massive and timeliness of transmission and receipt critical. If you want to see just how efficent this process can be watch your federal express person next time as he or she runs the handheld scanner over the bar codes of your package. The next industry to make maximum use of EDI was the grocery industry and its use of the Uniform Code System (UCS). Next were the automobile and aircraft manufacturers who began using EDI to do business with their parts suppliers. A problem arose when these industry specific EDI standards began to be a problem for those companies who may be doing business with several different industries and they found they were not all talking the same language. The American Standards Institute (ANSI) has taken the lead in the effort to promote the use of American Standard Code "X12" as the standard language for domestic commerce. The federal government has announced that this will be the generic standard for doing business at the governmental level. The standard is designed to allow any company to exchange transactions electronically with any other company, regardless of industry. Internationally, there is another standard referred to as EDIFACT (EDI for Administration, Commerce, and Transport). This is a set of principles designed for international EDI. Negotiations are taking place and it appears that the two standards will be integrated and this is not seen as a problem for the future.

In an effort to reduce costs and improve efficiencies in the Federal Government procurement process, agencies are advocating the use of EDI, Computer-aided Acquisition and Logistics Support (CALS), and other electronic communications.

The General Services Administration, the Department of Defense, the Department of Energy and the Veterans Administration are currently participating in projects that will fundamentally change the nature of contracting.

The U. S. Customs Services uses EDI for import/export transactions. The U. S. Postal Service is currently developing a strategy for EDI implementation throughout the Service. The Internal Revenue Service has been successful in a program that allows individual income tax returns to be filed electronically, using pre-approved commercial preparers. This program is now available in all 50 states, and now includes the ability for business returns and Employee Benefit Plan/Return Report Forms to be filed electronically. Individuals who participated received their refunds in an average of three weeks instead of the normal six to ten weeks. Preparers found Electronic Filing an excellent marketing tool to attract new clients and the IRS attained greater quality and efficiency. The reduction in the error rate was significant. The 21.2% error on paper returns during the test period was reduced to only 3% for electronically filed returns.

In May of 1988, Deputy Secretary of Defense William Taft issued a memorandum for Secretaries of the Military Departments and Directors of the Defense Agencies. The Memorandum stated that "consistent with [DOD] commitments to improve productivity and move toward a paperless environment, all DOD Components should make maximum use of electronic data interchange (EDI) for the paperless processing of all business-related transactions." The Assistant Secretary of Defense (Production and Logistics) was to direct the timely, effective, and consistent implementation of EDI between DOD and industry. The memo called for timely transition for the acceptance of EDI as the normal way of doing business with DOD by the early 1990s.

Last month, on May 7th, 1990, the Assistant Secretary of Defense designatd the Defense Logistics Agency as the Executive Agent for implementing and maintaining Defense-wide programs for electronic data interchange and data protection implementation. The executive agent was to submit a Executive Agent Plan within 30 days.

Attached to this paper is a just published report from the President's Council on Management Improvement request by OMB's Office of Federal Procurement Policy. As the report states the "need to address procurement automation from a Government-wide perspective was recognized inthe late 1970's with the establishment of the Procurement Automation Council. The history and failure of those efforts are detailed on page 13 of the report.

ISSUES.

Increasingly, larger corporations are issuing mandates to their suppliers that they must do business with them electronically. What effect is this having on those small businesses and what is the responsibility of larger corporations to their suppliers or subcontractors?

While EDI is producing many benefits for large corporations including faster response to customers, tighter manufacturing and inventory control, industry reports that real long-term benefits will only come when large companies (and the federal government) can persuade their smaller trader partners to use EDI, so that a "critical mass of EDI usage is achieved in all businesses." It is clear that mandates may bring some small businesses to EDI but it is not beneficial to either the large corporation or the small business to just say "do it" and not assist in the implementation and education of the supplier. Most EDI users recommend a partnership approach, offering eduation, technical and financial support. Those large companies who have worked closely with their customers and suppliers have had the easiest transition and the most success.

What are the federal agencies doing to assist and facilitate this move to a paperless business transaction environment? It has already been demonstrated that EDI brings increased productivity, reduced costs, reduced leadtime, reduced errors, potential enhancement of competition, potential enhancement of small business opportunities, and the potential for an expanded industrial base. With the proliferation of value-added networks and the choices to be made, how will the government make certain there is a generic intelligent gateway so that everyone has access to the information?

U.S. SMALL BUSINESS ADMINISTRATION
WASHINGTON, D.C. 20416

OFFICE OF CHIEF COUNSEL FOR ADVOCACY

STATEMENT

OF

MARK S. HAYWARD

ACTING CHIEF COUNSEL FOR ADVOCACY

U.S. SMALL BUSINESS ADMINISTRATION

BEFORE THE

U.S. HOUSE OF REPRESENTATIVES

COMMITTEE ON SMALL BUSINESS SUBCOMMITTEE ON

EXPORTS, TAX POLICY AND SPECIAL PROBLEMS

AND THE

SUBCOMMITTEE ON ENVIRONMENT AND LABOR

Mr. Chairman and members of the subcommittees:

As Acting Chief Counsel for Advocacy, U.S. Small Business Administration, I am pleased to submit this statement on Electronic Data Interchange and small businesses. Thank you for the opportunity to submit my statement for the hearing record. The views expressed in this testimony reflect those of the SBA and the Administration.

BACKGROUND

Electronic data interchange (EDI) is direct computer-to-computer exchange of information between different organizations. These information exchanges may be between two private enterprises, such as a customer and a supplier, or two government agencies, or a private enterprise and a government agency. The key to EDI is the standard format of the information exchanged and the agreement of the parties as to what information will be contained within the standard format.

Two small business dominated industries have been at the forefront of EDI standard development and implementation -- the transportation and grocery industries. The transportation industry pioneered commercial use of EDI in the 1970's by developing EDI standards for bills of lading, shipping directions, receipt acknowledgements, and other documents. Soon after the grocery industry developed its own EDI standard, known as the Uniform Code System, to facilitate communications between brokers and wholesalers. Unfortunately, the standards developed by these industries were not designed to be compatible and, therefore, there are major efforts underway to develop consistent and compatible EDI standards.

EDI will be particularly important for small firms in the future due to the convergence of two trends: increasing use of computers and modems by small firms and the imminent shrinkage of the small business work force. In 1989, 36% of firms with one to four employees used computers (an increase of more than 10% from 1985) while 93% of firms with between 50 and 99 employees used computers. Thus, a large percentage of small firms already have the hardware necessary to use EDI in their businesses. This percentage will increase as lower-cost, higher power machines become available. At the same time the number of younger workers, those between 16-34, will decline by the year 2000. Since small business have historically hired younger, less experienced workers these firms must adopt strategies to increase worker productivity as the labor pool shrinks. One of these strategies will be EDI because it offers increased speed, greater accuracy, and reduced clerical time for routine information transfers.

ADVANTAGES OF EDI FOR SMALL BUSINESSES

Aside from the increasing the efficiency of information transfers, EDI offers other opportunities for small businesses. For example, small businesses will most likely be the primary suppliers of new hardware and software for EDI systems. The explosion of FAX machines ("dinosaur EDI") in both large and small firm illustrates how quickly technologies with low barriers to entry (such as low hardware costs) can be diffused into the business community. Small firms are traditionally the fastest entrants into new markets and have already established themselves as the largest suppliers of EDI software. The Electronic Data Interchange Association has already testified that sixty percent of its members are small businesses.

Small firms will also be able to find additional growth opportunities which will come from electronic information exchange (bulletin boards, on-line services, etc.) and electronic contracting. Open EDI systems or commercial bulletin boards will allow small firms to more easily discover business opportunities on a national scale. EDI will also allow small firms to keep up-to-date inventory and workload records even if they have several remote locations, traveling work forces (such as delivery or repairmen), or distant warehousing operations. Finally, special forms of EDI, such as transmission of computer-aided design and computer-aided manufacturing (CAD and CAM) information, will become increasingly common. Transmission and availability of CAD and CAM data combined with the recent rise of small firms in the manufacturing sector, could significantly increase small manufacturers' international competitiveness.

Opportunities for contracting with the public sector will also be enhanced by EDI. Requests for quotes (RFQs) and Requests for proposals (RFPs) have already been made available to small firms as part of some Department of Defense (DOD) pilot programs - the response from small firms to these initiatives was very positive. As EDI use by all levels of government increases more of these on-line opportunities will be available for small firms. Of course, legal requirements for competition and other regulatory barriers will not allow complete elimination of a paper-based procurement system, but EDI can lower the entry barriers for small firms by providing information about a variety of government contracting opportunities. EDI may also be used to file routine paperwork with the government such as Equal Employment Opportunity Commission (EEOC) or subcontractor compliance reporting. Finally, the transmission of specifications and other technical data necessary to bid on government projects can be accomplished at much lower costs through EDI. The DOD's Computer-aided Acquisition and Logistics (CALS) program is currently attempting to resolve a multitude of technical and policy issues surrounding the transmission of these very large and complex electronic files.

PROBLEMS WITH EDI FOR SMALL BUSINESSES

Many of the potential EDI problems for small firms are the flip-side of the potential benefits. First, unnecessary barriers to entry may be created by requiring that small firms acquire EDI capability. The Rand Corporation has estimated that the cost of acquiring basic EDI capability from scratch to be a modest $3,000 to $4,000. Thus, firms selling common products or other "off the shelf" items will find the transition to EDI very cost-effective.

On the other hand, recent estimates on the cost of acquiring a highly sophisticated CALS compliant software system for major DOD weapons system contracts which will require information to be delivered in a CALS format are as high as $500,000 per firm. Costs of this magnitude are obviously a large barrier to small firms wishing to participate as subcontractors in these major weapons systems acquisitions. Given the already shrinking DOD market many small firms may choose not to make the investment in CALS. Alternatively, small firms may choose to use a CALS system provided by a prime contractor, or transmit the data in neutral electronic data format to the prime contractor for conversion to a CALS format. Another option would be the establishment of a CALS service center which could be used to convert technical data and other information into a CALS format and could be shared a multitude of small subcontractors.

EDI requirements could also lead to de facto sole sourcing in both the private and public sectors, if EDI is the only method for finding out about contracting opportunities or filing bids and proposals. Of course, restrictions on public contracting procedures, such as the Competition in Contracting Act, lessen this danger in the public sector. However, as many large private manufacturers begin to reduce their supplier bases, as many have announced their intention to do, de facto sole sourcing becomes an important issue. For example, the committees heard testimony from the Electric Motor and Contracting Co., Inc. (EMC), a small firm, that its adoption of EDI was prompted by its relationship with a large business - the Champion Paper Company. While the EMC voluntarily adopted EDI for use with Champion, it may have had no alternative if it wanted to continue to do business with Champion in the future. This type of subtle coercion can lead to severe difficulties when a small firm has several large customers with different EDI systems.

Two major standards currently are used for EDI: the X12 standard and the EDIFACT standard. The X12 standard was developed by the American National Standards Institute (ANSI). The EDIFACT standard was developed by the International Standards Organization. The EDIFACT standard has been endorsed by the European governments as part of the EC'92 initiative. SBA has no opinion as to which standard is preferable.

The existence of different EDI standards is troublesome for small firms. Using EMC as an example again, the firm noted in their testimony that it does business with many commercial entities. One distinct possibility is that EMC's Champion-sponsored EDI system uses the EDIFACT standard while EMC's other commercial vendors may choose to use the X12 standard. These standards have incompatible elements and both may be incompatible with EMC's internal inventory or manufacturing system. Thus, EMC may lose any efficiencies created by using EDI in maintenance of these different computer systems. This problem is magnified in the CALS environment where the software and hardware costs are greatly increased.

Major problems with dissemination of EDI technology, which are not specific to small firms, are the legal questions which arise from commercial practices which have traditionally involved paper. Laws such as the Uniform Commercial Code are based on paper systems and will need substantial modifications in order to accommodate EDI transactions. In addition, a significant amount of work needs to be done in the areas of electronic signaturing and verification before widespread use of EDI can occur. Questions as to who bears the responsibility for errors in transmission and the resulting costs must also be answered. However, these problems are not insurmountable and several groups are already attempting to establish the rights, duties, and obligations of entities involved in EDI transactions.

SBA EFFORTS ON EDI

SBA, particularly the Office of Advocacy and the Office of Procurement Assistance, have been involved with EDI for several years mainly in the government procurement area. SBA's Advocacy office is a member of the Office of Management and Budget's (OMB) Task Force on Electronic Signaturing and Message Verification. SBA is also heavily involved in DOD's CALS initiative. Office of Advocacy staff members serve on the Small Business Task Group of the DOD/Industry Steering Group on CALS. Meetings have also been held with SBA's Office of Procurement Assistance, DOD's office of Small and Disadvantage Business Utilization, DOD CALS officials, and Advocacy to discuss options for assisting small firms in becoming CALS compliant.

While these activities are not directly related to small businesses use of EDI or dissemination of EDI, Advocacy believes that they are important because the key to EDI is standardization and small firms should be represented while these standards are being debated.

RECOMMENDATIONS

I believe that EDI in the private sector will grow mostly on its own as small firms become more familiar with both the technology and the productivity advantages it offers. I have identified several legal and regulatory barriers in my testimony which may need to be addressed legislatively. Congress should act expeditiously to effectuate the necessary legislative change once they are agreed upon by the relevant working groups such as OMB task forces or the DOD/Industry Steering Group on CALS. EDI technology is clearly far ahead of the legal framework which must support it and unnecessary delays in modifying this framework will deny American firm use of this competitive weapon.

I have several recommendations for the development of government EDI procurement programs, such as DOD's CALS initiative. First and most importantly, the message which I have heard over and over again from small firms is that they will become CALS compliant -- if they must -- but there must be one and only one universal standard for CALS or other EDI programs. Small subcontractors will not adopt CALS if they must have one CALS system for doing business with Northrop and another for doing business with Boeing. Second, there should be assistance for these small firms to determine if the data systems which they are using or are purchasing are in fact CALS compliant. A DOD testing program for CALS products should be established so that small firms can be assured that these systems they may be required to purchase (at a cost of $500,000) are CALS compliant. Finally, some accommodation must be made in the area of security of proprietary information and technical data in order to protect small firms's investment in innovative technologies.

I commend the subcommittees for conducting this hearing on EDI and small businesses. I urge Congress to facilitate EDI dissemination in small firms by holding hearings on small firms issues when necessary and actively pursuing legislation which eliminates barriers to EDI implementation.